

AGENDA

COUNCIL WORKSHOP

Monday, April 23, 2012

6:00 p.m.

Committee Room, Municipal Hall

355 West Queens Road,

North Vancouver, BC

Council Members:

Mayor Richard Walton

Councillor Roger Bassam

Councillor Robin Hicks

Councillor Mike Little

Councillor Doug MacKay-Dunn

Councillor Lisa Muri

Councillor Alan Nixon



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COUNCIL WORKSHOP

6:00 p.m.
Monday, April 23, 2012
Committee Room, Municipal Hall
355 West Queens Road, North Vancouver

AGENDA

1. **Opening by the Mayor**
2. **Development Permit Area Regulations: Protection of the Natural Environment** p. 5-39
File No. 13.6480.2/002.000

Presentation: Tamsin Guppy, Community Planning

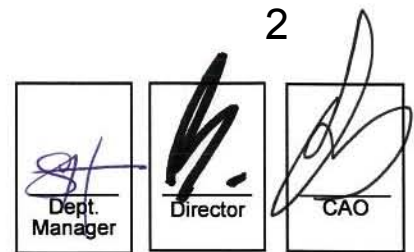
Report: Tamsin Guppy, Community Planning
3. **Development Permit Area Regulations: Wildfire Interface Development Permit Area Regulation** p. 41-67
File No. 13.6480.01/001.000

Presentation: Susan Haid, Manager – Sustainable Community Development, and Mark Brown, Community Forester

Report: Mark Brown, Community Forester
4. **Adjournment**

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COUNCIL AGENDA/INFORMATION				
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The District of North Vancouver REPORT TO COUNCIL

April 2, 2012
File: 13.6480.20/002.000
Tracking Number: RCA -

AUTHOR: Tamsin Guppy, Community Planning

SUBJECT: Development Permit Regulations for Protection of the Natural Environment

RECOMMENDATION:

That Council provide feedback on the proposed Protection of the Natural Environment Development Permit Areas at the upcoming workshop on April 23, 2012, in preparation for introduction of the revised Development Permit regulations into the new Official Community Plan later this spring.

REASON FOR REPORT:

To provide background material for the upcoming Council workshop on the natural environment Development Permit Areas, which include the Protection of the Natural Environment and Streamside Protection.

SUMMARY:

This report highlights the updates that are proposed to two existing Development Permit (DP) areas that together help protect the natural assets found in the District of North Vancouver, namely the Protection of the Natural Environment DP, and the Streamside Protection DP. In general, the changes are modest, and are aimed at making the development permit regulations easier to use, clearer to understand, and more well defined.

BACKGROUND:

As part of the review of the Official Community Plan, Schedule B the Development Permit section will be updated. This report speaks to the portion of Schedule B package that relates to protection of the natural environment.

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EXISTING POLICY:

The District first brought in a Development Permit for Protection of the Natural Environment in 1991.

In 2008, The Streamside Protection Development Permit Area was adopted.

ANALYSIS:

The public input on the Official Community Plan, reconfirmed the importance of the environment to District residents. In particular, residents continue to point to the lush natural setting as being a key characteristic of the District, and what makes District neighbourhoods distinct from other communities.



When discussing this issue further, it is clear that it is not only the beautiful backdrop that our forested mountains and bluffs create, but also the sense that our community is still part of a healthy ecosystem where wildlife can be seen and enjoyed.



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With this in mind, we had a fresh look at the two environmental development permit areas to see if any changes were warranted to address these goals and to reflect the information available today.

Development Permit Area for Protection of the Natural Environment:

This Development Permit has been in general use since 1991, and applies predominantly to public lands either in the alpine or as part of our park system. Where private land is included, it is because it is part of a larger wildlife corridor or contiguous forested area.



Whether private or public, there are always competing interests for how to manage and use land. The Development Permit regulations for the natural environment and streamside areas have not precluded development from occurring, but they do allow for review of projects with an eye to reducing impacts on the environment, and when impacts are unavoidable there is an opportunity for mitigation (see example below).



Capilano Suspension Bridge's Cliffwalk project, occurred inside the Streamside Protected Area. Impacts to the environment were minimized through innovative construction techniques, and habitat compensation projects like the planting and invasive species removal shown on the right.

Recognizing the usefulness of the existing Protection of the Natural Environment Development Area, staff agreed that it is important to keep this Development Permit, and update it to reflect the current context.

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Key Changes to the Protection of the Natural Environment DP Area (Map):

The majority of the lands that were included in the original 1991 Natural Environment DP map remain included in today's proposed map, and these lands are predominantly park lands or park zoned lands (like Grouse Mountain).

	District Wide	1991 DP Area	Proposed DP Area	Percentage Change
Land Area (m ²)	160,781,455m ²	129,197,479 m ²	133,187,812m ²	3.1%
Parcels	26,629	4,482	4,861	8.5%

Where the map has been changed it is for one of the following purposes:

- **Blanket Approach** – as with Streamside (adopted in 2008) we are using a blanket approach, where if a lot includes defined environmental features the entire lot is blanketed by the map.
- **Visual assets** – there are key bluffs like Pemberton Escarpment that were not included in the original 1991 Map, that are both an integral part of the character of our neighbourhoods and also include key environmental features.
- **Wildlife Corridors** - assets like the BC Hydro corridors and linear park systems form key wildlife corridors that allow a variety of wildlife to move from one area to another. The interconnectivity of ecosystems is of key importance as it allows birds and animals to both move from nesting areas to feeding areas, but also for populations of the same species to mix and breed, thereby ensuring the longevity of the species.
- **Corrections** based on existing patterns of development. In particular, the Parkgate area did not build out as anticipated in the late 80s, and as a result the existing map protects the wrong lands.
- **Removal of lands** where the key environmental assets are protected by the Streamside DP regulations, thereby making the natural environment DP redundant.

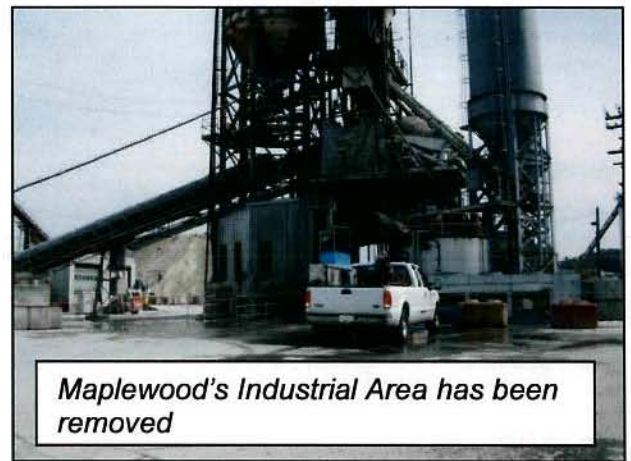
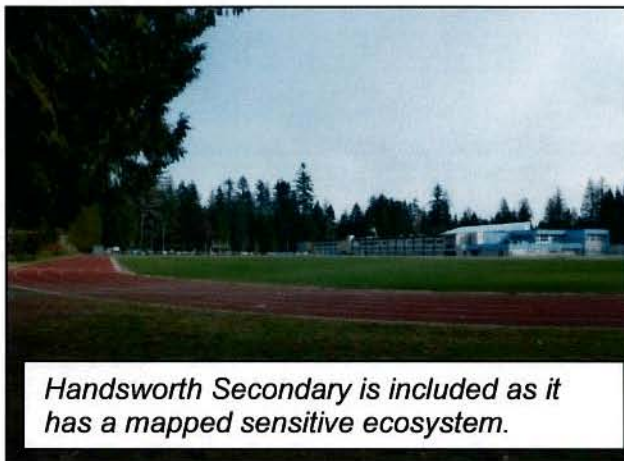


Bluffs like this one in Pemberton, are part of our community's character as well as providing habitat.



BC Hydro rights of way form wildlife corridors through our community.

- **Mapped sensitive ecosystems** that are part of the District's inventory (created in 2009 by Blackwell & Associates Ltd.). These areas are predominantly found in municipal parks, but in some cases extend onto private lands or public school sites like Handsworth Secondary School shown below.
- **Maplewood Area** – the industrial lands in the southern part of Maplewood have been removed, as it is recognized they have been developed and have no significant environmental value. The Village Centre is currently under review, and this portion of the map will be amended, when the current environmental study for Maplewood is completed, and prior to these regulations being introduced by bylaw.



Key Changes to the text of the Protection of the Natural Environment Development Permit Guidelines (Text):

1. The text now includes what is important to protect, specifically:
 - *mature stands of trees;*
 - *habitat for species at risk;*
 - *wetland;*
 - *raptor's nesting sites;* and
 - *wildlife corridors;*
2. Exemption language has been added to allow simple renovations and other types of projects to move forward without going through the DP process. Exemptions include:
 - Any development that does not impact the protected area;
 - Renovations and repairs to existing structures (where there is no expansion of the building footprint);
 - Habitat compensation or habitat enhancement work;



Staff conducting a study of pacific water shrew, a red listed species found in Seymour.

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- Routine maintenance, and standard garden work like the installation of seasonal play equipment;
 - Subdivisions where the minimum lot size can be met without using land that is inside the protected area; and
 - Public works carried out in accordance with the guidelines.
3. Guidelines for development have been added that include:
- Do not build in protected areas if it is avoidable;
 - Where it is impossible to avoid impacts, work with a qualified environmental professional to minimize the impacts and, if appropriate, provide habitat compensation; and
 - Consider variances to the Zoning Bylaw and other bylaws, if it will facilitate the protection of a key feature.



A public works project in Draycott Park that followed the principles of the guidelines and was therefore exempt.

Authority to Issue Permits:

As with Streamside, the authority to issue Development Permits that are in accordance with the Guidelines is proposed to be delegated to staff. Major projects, especially those that necessitate a significant environmental impact will continue to be forwarded to Council for consideration and issuance.

Streamside Protection Development Permit:

As this Development Permit is fairly new and was written in conjunction with environmental experts and extensive legal input, there are only minimal changes proposed to this portion of the attached set of regulations.

The minor changes focus on:

- Fine tuning the definition of *renovation and repair* to distinguish between renovations to an existing house and complete reconstruction; and
- Improving the diagrams and adding additional diagrams to help with the ease of use.

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Concurrence:

This chapter of the Development Permit schedule has been drafted with the assistance of staff experts pulled from Parks, Environment, Legal Services, and Planning. It has also relied heavily on reports prepared by environmental consultants, particularly on the recent work by BA Blackwell & Associates on ecosystem mapping.

Public Input:

Extensive public consultation for the Official Community Plan strengthened staff's understanding of the community's desires in terms of environmental objectives and lead to the development of the chapter on the environment in the OCP. These Development Permits are part of the implementation of the OCP objectives, as they help the municipality manage and protect the environment.

Consultation on DP directions occurred in the spring of 2011 as part of the Official Community Plan review. The draft guidelines were also presented to the Parks and Natural Environment Committee in March of 2012.

Conclusion:

The natural features, be they the mountain backdrops, local bluffs, creeks or ravines, are all part of what make our community special, and form a key piece of our ecological integrity as they allow local species to move through areas that were once all part of their habitat and range. These two Development Permit Areas work in tandem to protect the natural heritage of our community and with the proposed changes can continue to do so for many years to come.


Tamsin Guppy
Community Planning.

Attachments:

Proposed Development Permit Guidelines
Proposed Development Permit Area Map

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<u>REVIEWED WITH:</u>	<u>REVIEWED WITH:</u>	<u>REVIEWED WITH:</u>	<u>REVIEWED WITH:</u>
<input checked="" type="checkbox"/> Sustainable Community Development	<input type="checkbox"/> Clerk's Office	External Agencies:	Advisory Committees:
<input checked="" type="checkbox"/> Development Services	<input type="checkbox"/> Corporate Services	<input type="checkbox"/> Library Board	<input type="checkbox"/> _____
<input type="checkbox"/> Utilities	<input type="checkbox"/> Communications	<input type="checkbox"/> NS Health	<input type="checkbox"/> _____
<input type="checkbox"/> Engineering Operations	<input type="checkbox"/> Finance	<input type="checkbox"/> RCMP	<input type="checkbox"/> _____
<input checked="" type="checkbox"/> Parks & Environment	<input type="checkbox"/> Fire Services	<input type="checkbox"/> Recreation Commission	
<input type="checkbox"/> Economic Development	<input type="checkbox"/> Human resources	<input type="checkbox"/> Other: _____	
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PROTECTION OF THE NATURAL ENVIRONMENT, ITS ECOSYSTEMS AND BIOLOGICAL DIVERSITY

2. 0 Designation of Development Permit Area

Development Permit Areas are hereby designated pursuant to subsection 919.1(f) of the *Local Government Act* as follows:

- a) **Protection of the Natural Environment, its Ecosystems and Biological Diversity:** The Protection of the Natural Environment, its Ecosystems and Biological Diversity Development Permit Area (the "*Protection of the Natural Environment DPA*") is designated on the map entitled "Protection of the Natural Environment Development Permit Area" and the *Protection of the Natural Environment DPA* applies to all parcels shown on said map.
- b) **Streamside Protection:** The *Streamside Protection DPA* applies to all parcels shown on the Streamside Protection Map and to any other parcel in the District of North Vancouver that contains a *stream*, or is partly or entirely located:
 - (a) within 15 metres of the *top of bank* of a *stream*; or



- (b) within 10 metres of the top of a *ravine* bank for *ravines* that are greater than 60 metres in width; or
- (c) within 30 metres of the *top of bank* of a *stream* for parcels that are 0.5 hectares or larger in area and are located on or adjacent to the Capilano River, Lynn Creek, Seymour River, or on or adjacent to Mackay Creek at any point south of Marine Drive.

For greater certainty, the *Streamside Protection DPA* applies to all parcels that meet the above criteria, whether or not shown on the Streamside Protection Map.

2.1 Context

Natural areas including our rivers, wetlands and forested areas provide a spectacular setting and strong identity for our community. They also contain ecosystems that provide many functions necessary for our health and the well being of a wide variety of plants and animals. The local ecology is crucial to the health of the air we breathe, the water we drink and the soil beneath our feet, and it assists us in providing a host of ecological services including rainwater interception, soil stability, and temperature regulation. The District's objective is to protect and improve the integrity, ecological health and biodiversity of our natural systems. This means preserving our rich natural heritage for future generations while enjoying it responsibly today.



2.2 Purpose

a) The *Protection of the Natural Environment DPA* is established to address the following objectives:

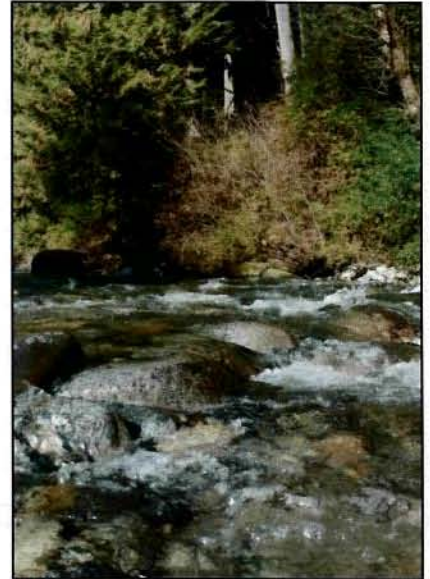
- to protect the District's natural setting, ecological systems and visual assets as a part of a rich natural heritage for the benefit of present and future generations;
- to protect *wildlife corridors* and the connectivity of our ecosystems;
- to protect our forested character and enhance the health of our forests, trees and soils;
- to conserve environmentally sensitive areas in order to protect biodiversity;
- to protect forested areas inside our watersheds in order to maintain or enhance hydrological function; and



- to regulate *development* on parcels in the Natural Environment DPA in furtherance of the above objectives.

b) The *Streamside Protection DPA* is established to address the following objectives:

- to protect the District's natural setting, ecological systems and visual assets as a part of a rich natural heritage for the benefit of present and future generations;
- to regulate *development* activities in and near *streams* in order to protect the aquatic environment;
- to conserve, enhance and restore *streamside areas* and ensure *development* does not result in net loss of *habitat*; and
- to identify when and how *development* may occur near *streams* in the District of North Vancouver and the criteria for such *development*.



2.3 Definitions

The following definitions apply to the *Protection of the Natural Environment DPA* and the *Streamside Protection DPA*.

“active floodplain” means an area of land below a boundary that is indicated by the visible high water mark, where the presence and action of the water are so common and usual, and so long continued in ordinary years, as to mark on the soil a character distinct from that of adjacent areas in terms of vegetation as well as in the nature of the soil itself;



Photo courtesy of the Lynn Canyon Ecology Centre

“development” means any of the following:

- a) construction of, addition to or alteration of a building or other structure; including, without limitation:
 - i. new building construction;
 - ii. building additions and alterations, including alterations to exterior materials;
 - iii. construction of, addition to or alteration of accessory buildings and structures, including pools, hot tubs, sheds and other structures; or
 - iv. construction of , addition to or alteration of retaining walls; and
- b) alteration of land, including, without limitation:
 - i. site clearing or removal of vegetation;
 - ii. landscaping, including planting and clearing;
 - iii. site grading;
 - iv. tree cutting;
 - v. placement of fill, or disturbance of soils, rocks or other native materials;
 - vi. creation of impervious and semi-impervious surfaces (such as patios and driveways);
 - vii. installation or construction or alteration of flood protection or erosion protection works;
 - viii. installation or construction or alteration of roads, trails, docks, wharves or bridges; or
 - ix. installation, construction or maintenance of drainage, hydro, water, sewer or other utilities or utility corridors, including underground sprinkler or irrigation systems;

“director” means the District’s General Manager, Planning, Properties and Permits and his or her designate and successor in position or function;

“environmental impact study” means a detailed environmental assessment prepared by a *qualified environmental professional* that includes delineation and assessment of the *natural environment protected area* or the *streamside protected area* in relation to a proposed change or *development*;



Photo courtesy of the Lynn Canyon Ecology Centre

“habitat” means the natural home of an organism, including without limitation,

- a) in respect of aquatic species, spawning grounds and nursery, rearing, food supply, migration and any other areas on which aquatic species depend directly or indirectly in order to carry out their life processes, or areas where aquatic species formerly occurred and have the potential to be reintroduced; and
- b) in respect of other wildlife species, the area or type of site where an individual or wildlife species naturally occurs or depends on directly or indirectly in order to carry out its life processes or formerly occurred and has the potential to be reintroduced;

“habitat compensation” means the enhancement or increase in the productivity of existing *streamside protection areas* or *natural environment protection areas*, or, where appropriate, the replacement, of *habitat* and vegetation, where measures to avoid, repair or mitigate impacts caused by *development* may not be adequate to protect the *streamside protection areas* or *natural environment protection areas* as the case may be;

“mature stand of trees” means a group of trees in which the canopy area is greater than 100m² and where at least 3 tree are at least 50 years old;

“natural environment protected area” means the area, in which protection, conservation or enhancement is required in order to protect *mature stands of trees*, *habitat for species at risk*, *wetlands*, *raptors’ nesting sites* or *wildlife corridors*, as the case may be;

“permanent structure” means any lawfully constructed or legally non-conforming building or structure that is a fixture on land and is placed or erected on a permanent foundation;

“Protection of the Natural Environment DPA” means the development permit area described and designated in section 2.0(a);

“qualified environmental professional” means an applied scientist or technologist or registered professional, acting alone or together with another *qualified environmental professional*, if

- (a) the individual is registered and in good standing in British Columbia with an appropriate professional organization constituted under an Act, acting under that association’s code of ethics and subject to disciplinary action by that association, and
- (b) the individual’s area of expertise is recognized by the District of North Vancouver as one that is acceptable for the purpose of providing all or part of an assessment report in respect of that *development* proposal, and
- (c) the individual is acting within that individual’s area of expertise;



“raptor” means a bird or its eggs of the order Falconiformes known as vultures, eagles, falcons and hawks or the order Strigiformes known as owls;

“ravine” means a narrow, steep-sided valley that is commonly eroded by running water and has a slope grade greater than 3:1;

“renovation or repair” means renovations or repairs to a *permanent structure* the value of which do not exceed 75% or more of the value of the *permanent structure* as determined by the *director*;

“species at risk” means an extirpated, endangered or threatened species or a *species of special concern*;

“species of special concern” means a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats;

“stream” means any of the following:

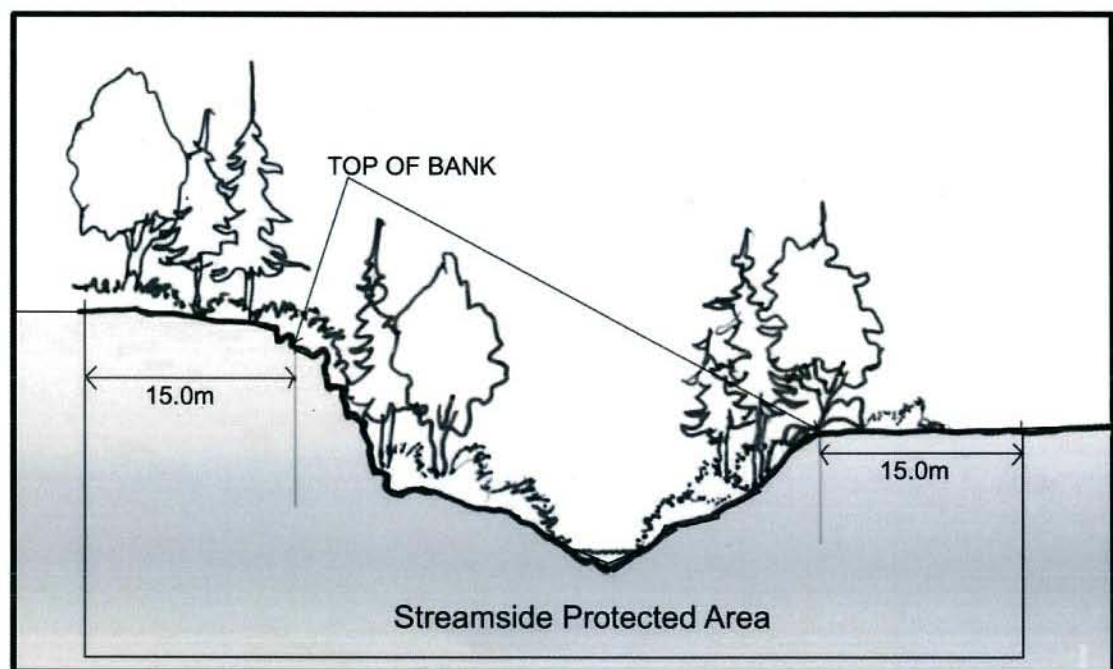
- (a) a pond, lake, river, creek or brook whether it usually contains water or not; and
- (b) a ditch, spring or *wetland* that is connected by surface flow to something referred to in paragraph (a);

“streamside area or habitat” means the area along a *stream* that influences natural features, functions and conditions of a *stream*;

“streamside protected area” means an area adjacent to a *stream* that links aquatic to terrestrial ecosystems and includes both existing and potential streamside vegetation and existing and potential upland vegetation that exerts an influence on the *stream*, the width of which includes the area:

- a) from the centreline of the *stream* to a distance of 15 metres measured perpendicularly from the *top of bank* of a *stream* (as illustrated in the following diagram); or:
- b) from the centreline of the *stream* to a distance of 10 metres measured perpendicularly from the *top of bank* of a *ravine* for *ravines* that are greater than 60 metres in width;
- c) for parcels greater than 0.5 hectares in size located on or adjacent to the Capilano River, Lynn Creek or Seymour River, or located on or adjacent to Mackay Creek at any point south of Marine Drive, the area from the centreline of the *stream* to a distance of 30 metres measured perpendicularly from the *top of bank* of a *stream*.

For the purpose of this definition, potential streamside vegetation is considered to exist if there is a reasonable ability for regeneration either with assistance through enhancement or naturally;



“Streamside Protection DPA” means the development permit area described and designated in section 2.0(b);

“top of bank” means:

- (a) the point closest to the boundary of the *active floodplain* of a *stream* where a break in the slope of the land occurs such that the grade beyond the break is flatter than 3:1 at any point for a minimum distance of 15 metres measured perpendicularly from the break; and
- (b) for a floodplain area not contained in a *ravine*, the edge of the *active floodplain* of a *stream* where the slope of the land beyond the edge is flatter than 3:1 at any point for a minimum distance of 15 metres measured perpendicularly from the edge;

“top of ravine bank” means the first significant break in a *ravine* slope where the break occurs such that the grade beyond the break is flatter than 3:1 for a minimum distance of 15 meters measured perpendicularly from the break, and the break does not include a bench within the *ravine* that could be developed;

“wetland” means land that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal conditions does support, vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, fens, estuaries and similar areas that are not part of the *active floodplain* of a *stream*;

“wildlife corridor” means a series of connected or linked *habitats* that may include a streamside *area or habitat* or a series of *mature stands or trees*, that facilitates or aids in the movement of species;



The BC Hydro rights of way that cross the District provide corridors that wildlife use to move from one area to another.

2.4 Requirement for a Development Permit

All *development* within the *Protection of the Natural Environment DPA* and the *Streamside Protection DPA* requires a development permit unless exempted in accordance with section 2.5.

Development Permits issued may include any development conditions permitted by the *Local Government Act*, as appropriate to the specific *development* in question.



Photo courtesy of the Lynn Canyon Ecology Centre

2.5 Exemptions:

Under certain conditions, as outlined below, *development* may be exempted from the requirement to obtain a development permit. If an exemption for a specific *development* is available, staff will confirm the exemption in writing.

Development exempted from the requirement to obtain a Development Permit may still be required to obtain an Environmental Permit in accordance with the provisions of Environmental Protection and Preservation Bylaw No. 6515 as amended from time to time.

If a parcel is located in both the *Protection of the Natural Environment DPA* and the *Streamside Protection DPA*, no exemption from the development permit requirement in connection with one development permit area shall act as an exemption in connection with the other development permit area.

Subject to the foregoing paragraph, a development permit shall not be required if the following conditions are fulfilled:

A. In the *Protection of the Natural Environment DPA*, no development permit shall be required in connection with:

- a) *development* that does not encroach or impact in any way on:
 - a) *habitat for species at risk*;
 - b) *mature stands of trees*;
 - c) *raptor's nesting sites*;
 - d) *wetland*; or
 - e) *wildlife corridors*;
- b) *renovation or repair of a permanent structure* on its existing foundation provided that there is no expansion of the building footprint, and no clearing, grading or disturbance of soils, vegetation or trees;
- c) interior renovations within the existing foundation of a *permanent structure*;
- d) public works and services and maintenance activities carried out by, or on behalf of, the District of North Vancouver and approved by the *director*;
- e) *habitat compensation* projects and other *habitat* creation, restoration and enhancement works carried out in accordance with District bylaws and a plan approved in writing by the *director*;
- f) routine maintenance of existing landscaping and lawn areas;
- g) installation of seasonal play or recreational equipment on existing yard/lawn areas, such as sandboxes or swing sets, but not including structures such as tree forts that may affect tree health;
- h) paths for personal use by the parcel owners, provided they do not exceed 1.0 metre in width, are constructed of pervious natural materials with no concrete, asphalt or pavers and no creosoted or otherwise treated wood, do not involve structural stairs, and require no removal of native vegetation;
- i) minor alterations or repairs to existing roads paths or driveways, provided that there is no further disturbance of land or vegetation; or

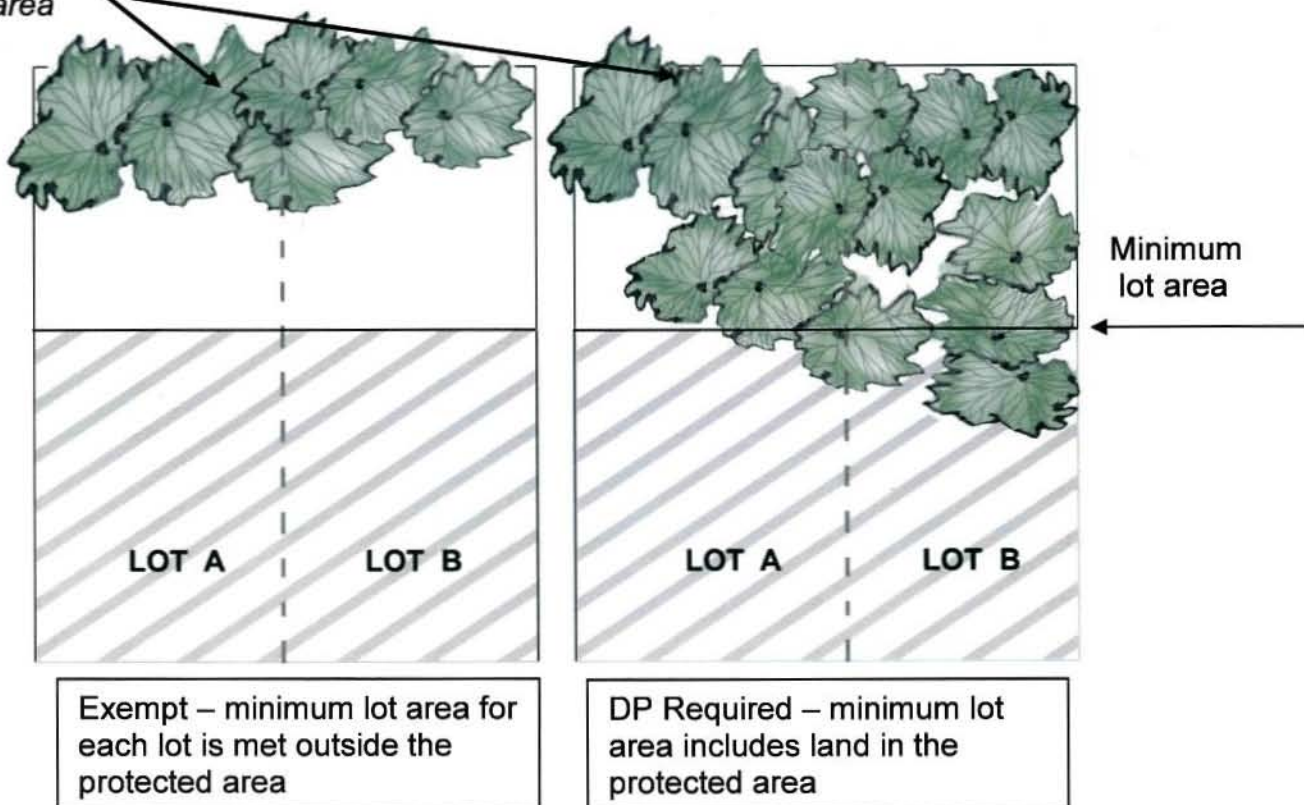


j) *subdivision* of land where:

- minimum parcel area requirements are met exclusive of any land within any *natural environment protected area(s)*, specifically:
 1. *habitat for species at risk*;
 2. *mature stands of trees*;
 3. *raptor's nesting sites*;
 4. *wetland*; or
 5. *wildlife corridors*;
- *natural environment protected areas* are kept undisturbed and intact,
- no *development* activities related to the creation and servicing of parcels will occur in *natural environment protected areas*, and
- no restoration or enhancement of *natural environment protected areas* is required.

In order to determine whether a proposed subdivision qualifies for an exemption, applicants may be required to provide additional information on the condition of the existing *habitat*.

*natural environment
protected area*



B. In the *Streamside Protection DPA*, no development permit shall be required in connection with:

- a) *development* outside the *streamside protected area*;
- b) *renovation or repair* of a *permanent structure* on its existing foundation, provided no further extension or encroachment into the *streamside protected area* occurs, including cantilevered or projecting portions of the *permanent structure*, and provided that there is no clearing, grading or disturbance to soils, vegetation or trees within the *streamside protected area* and no drainage alteration;
- c) Interior renovations within the existing foundation of a *permanent structure*;
- d) public works and services and maintenance activities carried out by or on behalf of the District of North Vancouver and approved by the *director*;
- e) Streamside vegetation management such as removal of invasive species and revegetation with native streamside species, according to a plan approved in writing by the *director*;
- f) *habitat* creation, restoration and enhancement works within streams that are approved under applicable provincial and federal legislation;
- g) *habitat compensation* projects and other habitat creation, restoration and enhancement works that are not within *streams* and are carried out in accordance with District bylaws and a plan prepared by a *qualified environmental professional* and approved in writing by the *director*;
- h) paths for personal use by the parcel owners, provided they do not exceed 1.0 metre in width, are constructed of pervious natural materials with no concrete, asphalt or pavers and no creosoted or otherwise treated wood, do not involve structural stairs, require no

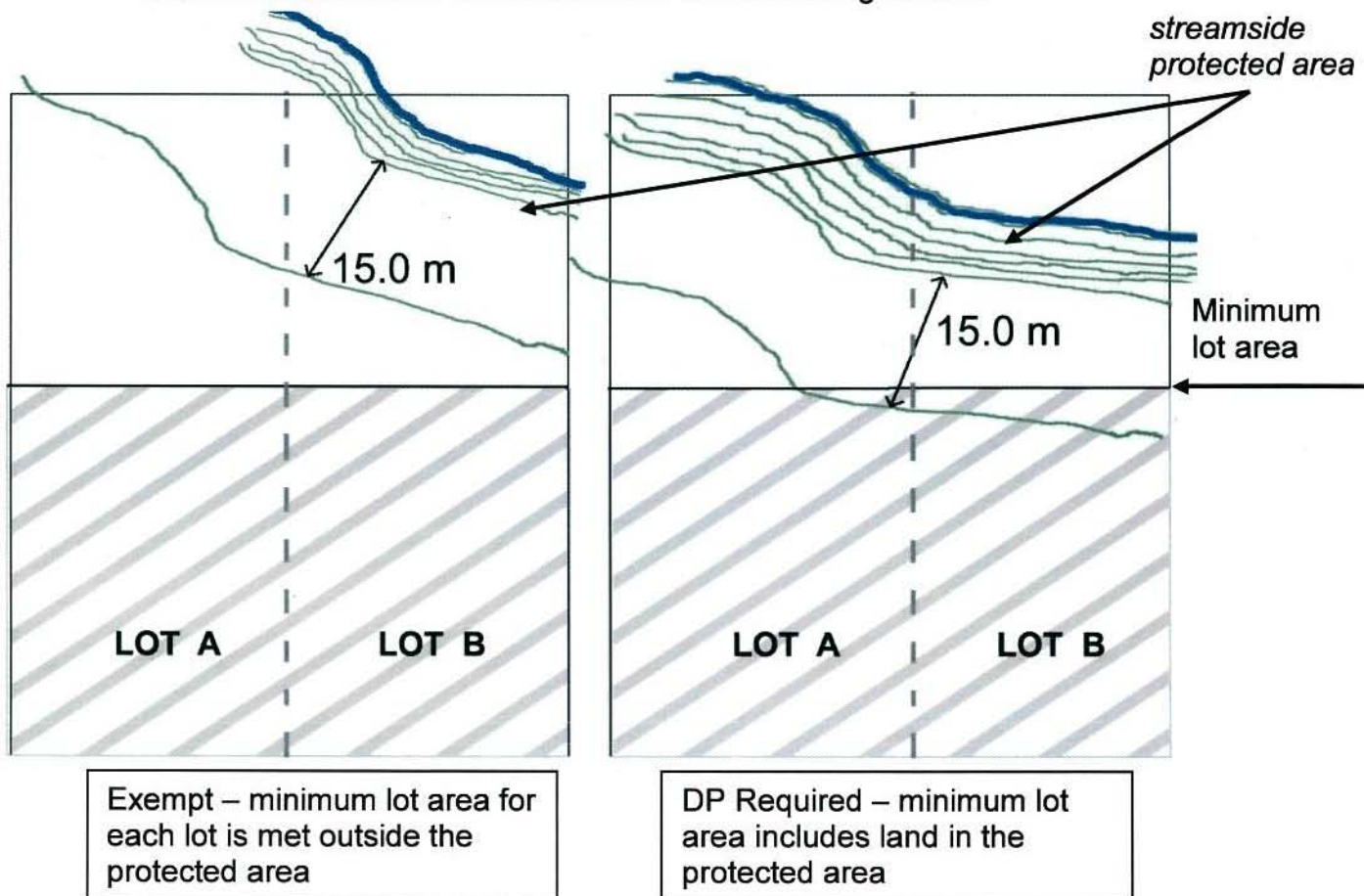
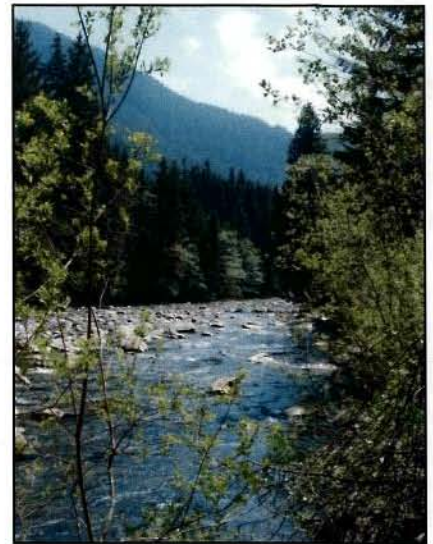


Brownies doing restoration planting in the Lower Seymour Conservation Area.

removal of streamside vegetation and lead to a stable *stream* bank;

- i) minor alterations or repairs to existing roads paths or driveways, provided that these is no further disturbance of land or vegetation.
- j) subdivision of land where:
 - minimum parcel area requirements are met exclusive of the *streamside protected area(s)*,
 - where the *streamside protected areas* are kept undisturbed and intact,
 - no *development* activities related to the creation and servicing of parcels will occur in the *streamside protected areas*, and
 - no restoration or enhancement of the *streamside protected areas* is required.

In order to determine whether a proposed subdivision qualifies for an exemption, applicants may be required to provide additional information on the condition of the existing *habitat*.



2.6 Guidelines:

The following guidelines should be followed when assessing a development permit application and when determining what conditions and requirements, if any, should be imposed in a development permit. Alternative methods or materials may be considered where they provide equivalent or better performance and fulfill the objectives of these guidelines. Staff should require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding use of alternative methods or materials.

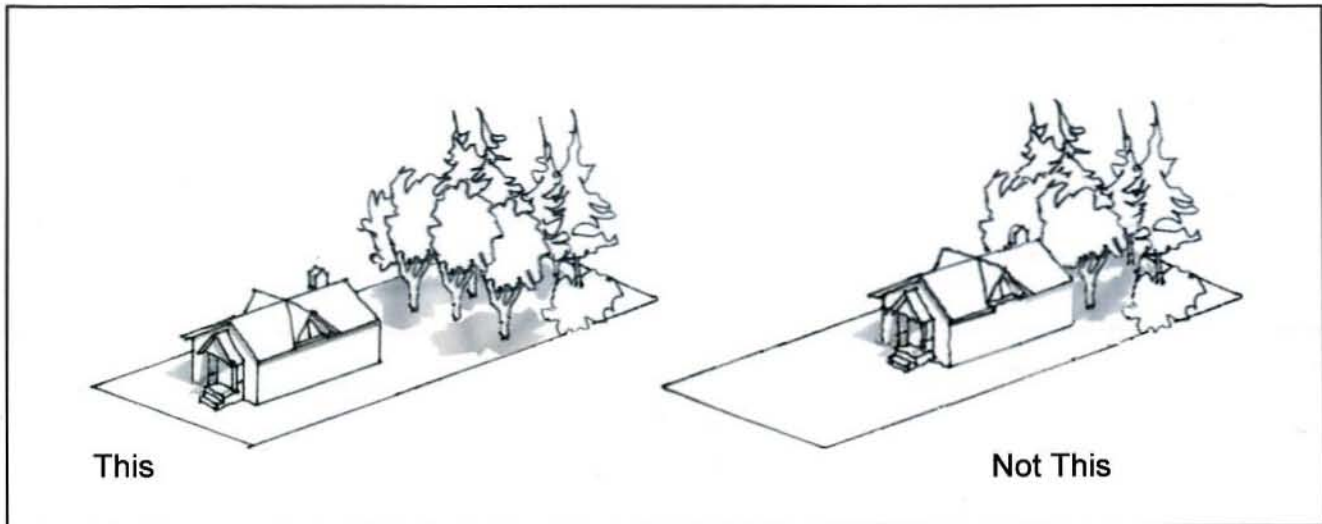
The District may impose in a development permit any condition or requirement permitted by law in order to address the objectives set out in section 2.2 and to ensure compliance with these guidelines.

Where a parcel is designated as more than one type of Development Permit Area, a single Development Permit may be issued, provided the guidelines for each Development Permit Area are addressed in the Development Permit.

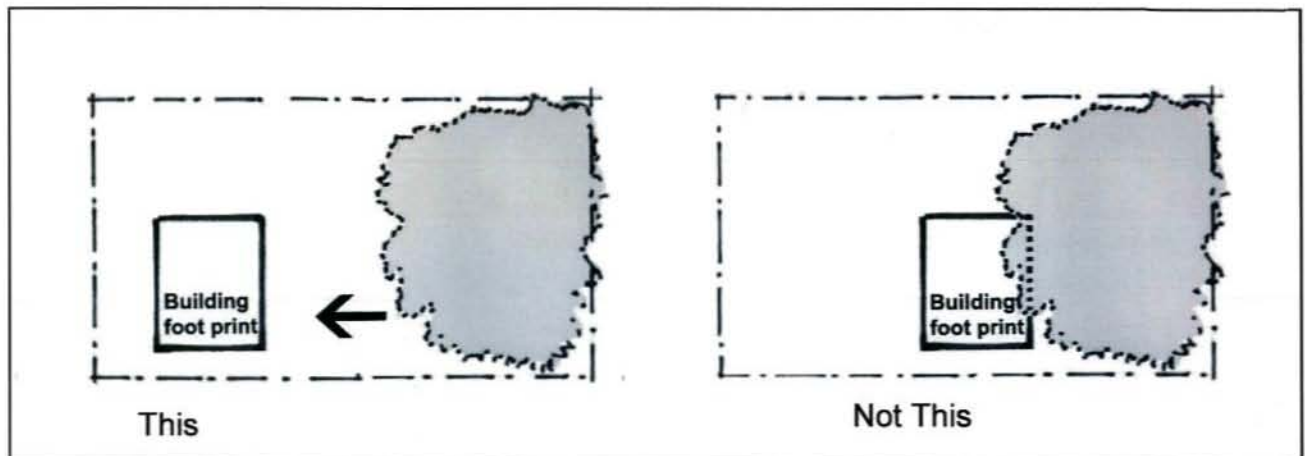
A. In the *Protection of the Natural Environment DPA* – the following guidelines apply:

- (a) Efforts should be made to locate *development* away from:
- *habitat for species at risk;*
 - *mature stands of trees;*
 - *raptor's nesting sites;*
 - *wetland;* or
 - *wildlife corridors.*





- (b) Without limiting subsection (a) above, proposed development should be located and designed so as to minimize any damage to:
- *mature stands of trees;*
 - *habitat for species at risk;*
 - *wetland;*
 - *raptors' nesting sites;* and
 - *wildlife corridors;*
- and efforts should be made to protect and enhance the *natural environment protected area*, including the natural tree cover and vegetation, drainage patterns and landforms.
- (c) Where necessary, variances to the *Zoning Bylaw* and other bylaws may be considered by Council, in its discretion, in order to prevent or minimize damage to:
- *habitat for species at risk;*
 - *mature stands of trees;*
 - *raptor's nesting sites;*
 - *wetland;* or
 - *wildlife corridors;*
- The variances that may be considered include, but are not limited to:
- reduced building setbacks on other portions of the parcel;
 - increased maximum building height; and
 - reduced parking space requirements.



(d) New *permanent structures* on a parcel should be located as far away from *natural environment protected areas* as is possible or feasible and in any event as far away from *natural environment protected areas* as existing *permanent structures*, if any, on the parcel.

(e) Applicants may be required to submit a detailed *environmental impact study* prepared by a *qualified environmental professional*, to identify any potential issues and impacts relating to the proposed *development* and relating to protection, conservation and enhancement of:

- *mature stands of trees*;
- *habitat for species at risk*;
- *wetland*;
- *raptors' nesting sites*; or
- *wildlife corridors*;

The *environmental impact study* may be required to include:

- delineation of the *natural environment protected area* including details on the features and extent of the said area;
- description and relevant details of the proposed *development* and an assessment of the impacts of said *development* including impacts associated with the construction, operation and/or maintenance of the *development* on vegetation, wildlife, *habitat*, hydrology and soils;
- delineation and identification of any sensitive ecosystems for inclusion on the District's sensitive ecosystem inventory; and



- where necessary and appropriate, description of any *habitat compensation* projects.
- (f) Where land and/or natural vegetation in the *natural environment protected area* is disturbed or damaged due to *development*, the applicant may be required to provide *habitat compensation* for the portion of the *natural environment protected area* that will be affected, as approved by the District. A *habitat compensation* project, may need to be coordinated with or prepared by the *qualified environmental professional* and based on a legal survey, but in all cases should include:
- a site plan drawn to scale showing the site of the *development*;
 - a planting plan, listing each species to be planted and each plant's size; and
 - where appropriate details on soil work grading and drainage.
- (g) Staff may require a legal survey and *environmental impact study* or letter from a *qualified environmental professional* in order to determine the boundaries of the *natural environment protected area* and confirm that the *development* is not impacting the *area*.
- (h) Development Permits issued may require that:
- the *natural environment protected area* be protected or enhanced in accordance with the permit;
 - The timing and sequence of *development* occur within specific dates or construction window to minimize environmental impact;
 - specific *development* works or construction techniques (e.g., erosion and sediment control measures, fencing off of trees or vegetation, etc.) be used to ensure minimal or no impact to the *natural environment protected area*;
 - mitigation measures (e.g. removal of impervious surfaces, replanting of riparian species, etc.) be undertaken to reduce impacts or restore *habitat* within the *natural environment protected area*;
 - security in the form of a cash deposit or letter of credit may be required to secure satisfactory completion of *habitat* protection works, restoration

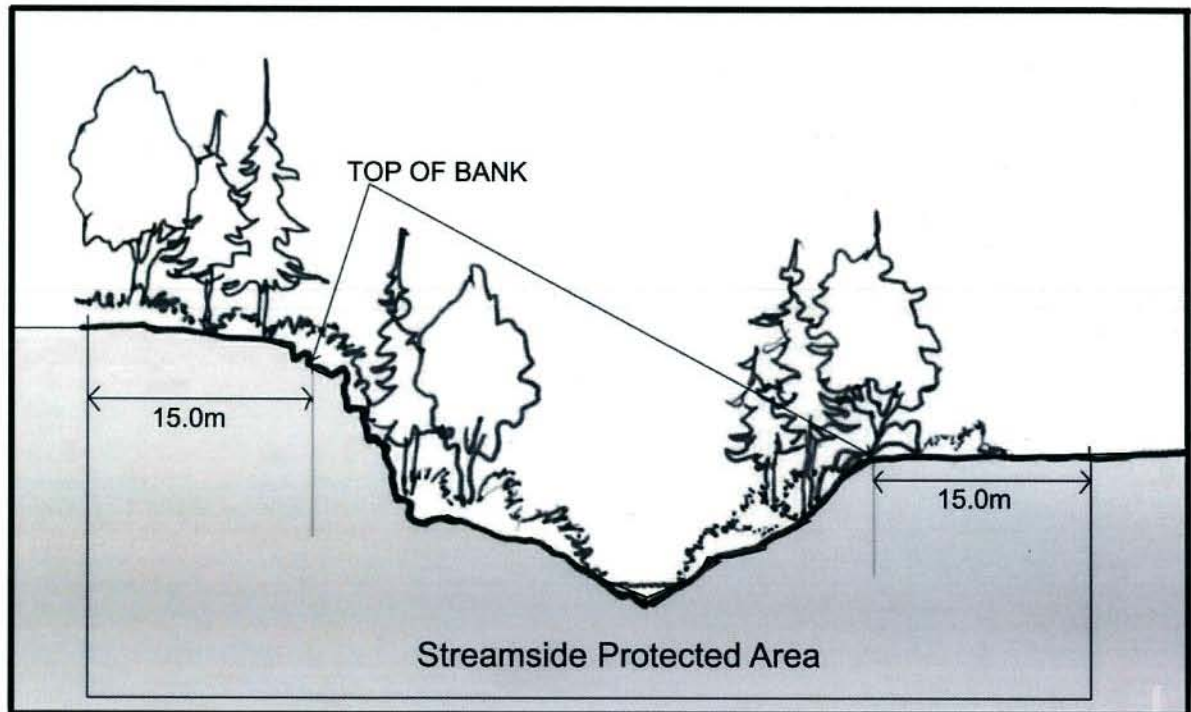


- measures, *habitat compensation* or other works for the protection of the natural environment (the "required works"). The security shall be in the amount of 125% of the estimated value of the required works as determined by the *director*; and
- security in the form of a cash deposit or letter of credit may also be required to secure recovery of the cost of any works, construction or other activities with respect to the correction of any damage to the environment that results as a consequence of a contravention of any condition or requirement in the protection of the natural environment development permit. The security taken pursuant to the building permit in relation to the proposed *development* for which the development permit is issued shall constitute the security for the purpose of this subsection, and shall not be released until damage, if any, has been remediated to the satisfaction of the *director*.



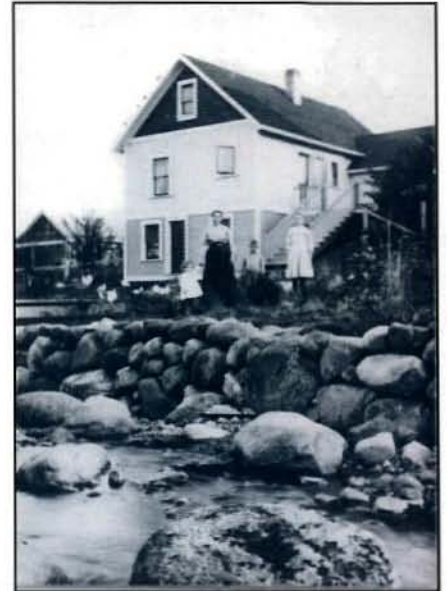
B. In the *Streamside Protection DPA* – the following guidelines apply:

- (a) All *development* should be located outside the *streamside protected area*.



- (b) Without limiting subsection (a) above, proposed *development* in the *streamside protected area* should be located so as to avoid any damaging impact to the *streamside protected area* and so as to minimize intrusion into the *streamside protected area*, and efforts should be made to protect and enhance the natural features of the *streamside protected area*, including the natural tree cover and vegetation, drainage patterns and landforms.
- (c) Where necessary, variances to the Zoning Bylaw and other bylaws may be considered by Council, in its discretion, in order to prevent the loss of *habitat* within a *streamside protected area*. The variances that may be considered include, but are not limited to:
- reduced building setbacks on other portions of the parcel;
 - increased maximum building height; and

- reduced parking space requirements.
- (d) New *permanent structures* on a parcel should be located as far away from the *stream* or *wetland* as is possible or feasible and in any event as far away from the *stream* or *wetland* as existing *permanent structures*, if any, on the parcel.
- (e) As noted above, *development* should be located outside the *streamside protected area*, however, where that is not possible, the area within 5 metres of the *top of bank*, edge of *wetland* or *top of ravine bank* should remain free of *development* including new impervious or semi-impervious surfaces and new *permanent structures* or extensions of existing *permanent structures*, including decks and patios.
- (f) Applicants may be required to submit a detailed assessment report, prepared by a *qualified environmental professional*, to identify any potential issues relating to the proposed *development* and its impacts on the *streamside protected area* and relating to protection, preservation and enhancement of the *streamside protected area*, including issues and impacts associated with the District of North Vancouver's broader objectives of streamside protection and *wildlife corridor* enhancement, as set out herein, and to identify any mitigative measures that should be undertaken. Applicants may also be required to obtain approval from Fisheries and Oceans Canada (DFO) under the *Fisheries Act*. Any DFO approvals required by the District will be considered as part of the Development Permit review, but, for greater certainty, the Development Permit process will also consider impacts to other streamside or environmental values in addition to fish *habitat*.
- (g) Where land and/or natural vegetation in the *streamside protected area* is disturbed or damaged due to *development*, the applicant may be required to provide *habitat compensation* for the portion of the *streamside protected area* that will be affected, as approved by the District. A *habitat*

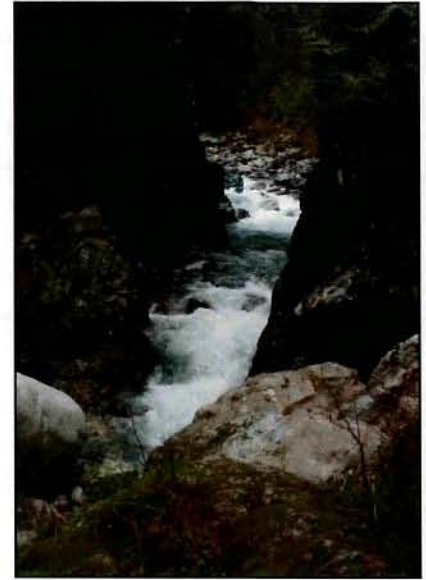


Many existing homes predate modern regulations, these guidelines allow existing homes to remain, but ask that new development follow current practices. Photo courtesy of the Museum and Archives.



compensation plan, may need to be coordinated with or prepared by the *qualified environmental professional* and based on a legal survey, but in all cases should include:

- A site plan drawn to scale showing the site of the *development*;
 - A planting plan, listing each species to be planted and each plants size; and
 - Where appropriate details on soil work and grading.
- (h) To determine the location of the *streamside protected area* on a parcel, applicants may be required to confirm, through legal survey, the *top of bank*, *top of ravine bank* and/or edge of *wetland* in relation to property lines and existing and proposed *development*.
- (i) Development Permits issued may require that:
- *streamside area or habitat* and trees or other vegetation within the *streamside protected area* be preserved or enhanced in accordance with the permit;
 - the timing and sequence of *development* occur within specific dates or construction window to minimize impact to streams, fish or wildlife species;
 - specific *development* works or construction techniques (e.g., erosion and sediment control measures, fencing off of trees or vegetation, etc.) be used to ensure minimal or no impact to the *streamside protected area*;
 - Mitigation measures (e.g. removal of impervious surfaces, replanting of riparian species, etc.) be undertaken to reduce impacts or restore *habitat* within the *streamside protected area*;
 - security in the form of a cash deposit or letter of credit be provided to secure satisfactory completion of *habitat* protection works, restoration measures, *habitat compensation* or other works for the protection of the *streams* and *streamside habitat* (the "required works"). This security shall be in the amount of 125% of the estimated value of the required works as determined by the *director*, and
 - security in the form of a cash deposit or letter of credit be provided to secure recovery of the cost of any works, construction or other activities with respect to the correction of any damage to the environment that results as a consequence of a contravention of any condition or requirement in the streamside protection development permit. The security taken pursuant to the building permit in relation to the proposed *development* for which the



development permit is issued shall constitute the security for the purpose of this subsection, and shall not be released until damage, if any, has been remediated to the satisfaction of the *director*.



2.7 Designation of Development Approval Information Areas

Development Approval Information Areas are hereby designated pursuant to section 920.01 of the Local Government Act as follows:

- a) All parcels within the *Protection of the Natural Environment DPA* are designated as the Protection of the Natural Environment Development Approval Information Area.
- b) All parcels within the *Streamside Protection DPA* are designated as the Streamside Protection Development Approval Information Area.

2.8 Objectives of Development Approval Information Area Designations:

- a) The objective of the Protection of the Natural Environment Development Approval Information Area is to facilitate the provision of accurate site-specific information regarding the natural environment as needed for the proper processing of protection of natural environment development permit applications in furtherance of the objectives set out at section 2.2(a) herein.
- i. The objective of the Streamside Protection Development Approval Information Area is to facilitate the provision of accurate site-specific information regarding the natural environment as needed for the proper processing of streamside protection development permit applications in furtherance of the objectives set out at section 2.2(b) herein.

2.9 Development Approval Information Area Guidelines:

- a) If required by the District, applicants for a Protection of the Natural Environment Development Permit or a Streamside Protection Development Permit must submit the information set out in this section.
- b) Where any *development* is proposed within a *natural environment protected area* or a *streamside protected area*, the District may require that a report prepared by a *qualified environmental professional* be provided at the applicant's expense to assess existing conditions and impacts of the proposed *development* on:
 - i. *streams and streamside areas*, in the case of proposed development in a *streamside protected area*; or
 - ii. *mature stands of trees, habitat for species at risk, wetlands, raptors' nesting sites or wildlife corridors*, in the case of proposed development in a *natural environment protected area*.
- c) Information on existing conditions (baseline information) on the site should be provided in a survey plan prepared by a certified B.C. Land Surveyor, that includes, at a minimum, the following:
 - i. plans at 1:100 minimum scale with north arrow and minimum 1 metre contour interval;
 - ii. parcel boundaries and adjacent streets and rights of way;
 - iii. natural features including *streams, wetlands, top of bank, mature stands of trees, habitat for species at risk, wetlands, raptors' nesting sites and wildlife corridors*;
 - iv. boundaries of the *streamside protected area* or the natural environment protected area, as the case may be, determined in accordance with this bylaw and the guidelines herein;
 - v. any existing *development* including locations and dimensions of existing buildings, driveways, parking areas, utilities, retaining walls and landscaping; and
 - vi. all trees and vegetation within the *natural environment protected area* or *streamside protected area*, as the case may be, highlighting vegetation and trees that will be affected or removed by the proposed



development. The District may require that a tree assessment and retention/restoration plan be completed by a Professional Arborist in accordance with Master Requirement List (MRL) Form #ENV106 and #ENV108A, which are available for viewing at the District's website at www.dnv.org, as amended from time to time.



- d) Information on the proposed *development* should include:
 - i. locations and dimensions of proposed buildings, driveways, parking areas and utility services relative to the *natural environment protected area* or *streamside protected area*, as the case may be; and
 - ii. any temporary encroachment(s) by clearing, grading and other construction-related activities into the *natural environment protected area* or *streamside protected area*, as the case may be, and measures to mitigate and/or compensate such encroachment(s).
- e) A written analysis should be provided demonstrating that the proposed *development* is consistent with the applicable Development Permit Guidelines, and identifying any mitigation or compensation measures that are consistent with the Guidelines, including measures that may be specified as Development Permit conditions.
- f) The report must describe by plan and text the erosion control measures that are to be put in place during the site preparation and construction stages of the project.
- g) If the *director* is not satisfied that the information is sufficient to comply with this section in scope, level of detail or accuracy or in any other respect, the *director* may, within 30 business days of receipt of the information submitted by the applicant, require the applicant to provide, at the applicants expense, further information to reasonably comply with this section.

3.0 Delegation of Authority to issue Development Permits

- a) Subject to subsection 3.0(b), Council hereby delegates to the *director* the powers of the Council to issue protection of natural environment development permits and streamside protection development permits under section 920 of the *Local Government Act*, in accordance with the applicable guidelines herein, provided that:
 - i. the development permit does not involve any variances of the District of North Vancouver Zoning Bylaw 1965;

- ii. the land is not designated as part of another development permit area in addition to the *Protection of the Natural Environment DPA* or the *Streamside Protection DPA*; and
 - iii. in the case of a streamside protection development permit, the development permit does not involve parcels that are greater than 0.5 hectares in size located on or adjacent to the Capilano River, Lynn Creek or Seymour River, or located on or adjacent to Mackay Creek at any point south of Marine Drive.
- b) The *director* may refer any application for a protection of natural environment development permit or a streamside protection development permit to Council for decision, and in that event the provisions of this section related to reconsideration do not apply to the application.
- c) The *director* may, in accordance with the applicable guidelines herein, require the applicant to provide security to be applied by the District to the cost of :
- i. providing landscaping, including vegetation and trees provided to preserve, protect, restore or enhance riparian areas, that the permit requires to be provided;
 - ii. correcting an unsafe condition that has resulted as a consequence of the contravention of a condition in the permit; and
 - iii. correcting damage to the environment that has resulted as a consequence of the contravention of a condition in the permit.
- d) In imposing the security requirements set out in subsection (c), the *director* may require security to be maintained for so long as there is a reasonable possibility of contravention of a landscaping condition, the creation of an unsafe condition, and the causing of harm to the environment in connection with the development authorized by the permit.
- e) Within 10 business days of being notified in writing of the *director's* decision under this section 3.0 regarding a protection of natural environment development permit application or a streamside protection development permit application, the applicant may, upon paying the application fee set out in Schedule "W" of the *District of North Vancouver Fees and Charges Bylaw 6481*. (7806), as amended from time to time, request Council to reconsider the *director's* decision by giving notice in writing to the Municipal Clerk setting out:



- i. the grounds on which the applicant considers the decision is inappropriate; and
 - ii. the decision that the applicant considers would be appropriate for Council to make having regard to the applicable guidelines herein, including development permit conditions and security conditions that the applicant considers would be appropriate.
- f) The Municipal Clerk must place each request for reconsideration on the agenda of a meeting of the Council to be held not earlier than 2 weeks from the date on which the request for reconsideration and payment of the applicable application fee was received.
- g) The Municipal Clerk must notify the *director* of each request for reconsideration and the *director* must:
 - ii. prior to the date of the meeting at which the reconsideration will occur, provide a written report to the Council setting out, at the level of detail the *director* considers appropriate, the rationale for the *director's* decision; or
 - iii. at the meeting at which the reconsideration occurs, provide an oral report on the rationale for the *director's* decision.
- h) The Municipal Clerk must notify the applicant of the date of the meeting at which the reconsideration will occur.
- i) The Council may either confirm the decision of the *director* or substitute its own decision, including with respect to development permit conditions and amounts of security.





DRAFT

WEST VANCOUVER

CITY of
NORTH VANCOUVER

Burrard Inlet

PORT MOODY

BELCARRA

Properties within the Protection of the Natural Environment Area




GIS DEPARTMENT
GEOGRAPHIC INFORMATION SYSTEMS
604.990.2311 www.geoweb.dmv.org gis@dmv.org
NORTH VANCOUVER DISTRICT

PROTECTION OF THE NATURAL ENVIRONMENT DEVELOPMENT PERMIT AREA

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COUNCIL AGENDA/INFORMATION			
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The District of North Vancouver REPORT TO COUNCIL

April 11, 2012

File: 13.6480.01/001.000

Tracking Number: RCA 00

AUTHOR: Mark Brown

SUBJECT: Wildfire Interface Development Permit Area Regulation

RECOMMENDATION:

That Council provide feedback on the current refinements to the Wildfire Interface section of the proposed Natural Hazard Development Permit Areas (DPAs) at its workshop on April 23, 2012 in preparation for introduction of new DPAs into the Official Community Plan.

REASON FOR REPORT:

Feedback on the proposed Wildfire Interface DPA was provided by Council at its workshop on February 28, 2012. Staff have considered this feedback and revised the Wildfire Interface DPA accordingly. This report summarizes the relevant changes and updates.

SUMMARY:

As follow up to the February 28, 2012 Council workshop on the Natural Hazard Development Permit Areas, several refinements to the draft Wildfire Interface DPA have been made in response to Council feedback. These are shown (in Track Changes) on the attached DPA regulations and summarized below.

Re: questions regarding the number of potential properties applicable to the Wildfire Interface DPA

- The Wildfire Interface DPA only applies to construction of new homes in the wildfire interface area. It is estimated that approximately 20% (or less) of new homes built annually may be in the wildfire interface area. The total number of new homes built in DNV in 2010 was 97 and in 2011, 101 respectively meaning there may be approximately 20 new homes built annually where a Wildfire Interface DP would apply.
- To further clarify that the Wildfire Interface DPA applies only to the construction of new homes, the language in the Exemptions and Definitions sections of the DPA regulations has been refined. Renovations, repairs or additions are exempt from the DPA and definitions have been added to clarify these exemptions (Note, these

definitions are consistent with other DPAs). A previous statement exempting construction that does not require a building permit has been deleted as it was unnecessary and confusing (the exemption of renovations, repairs and additions covers these situations).

Re: comments that the Wildfire Interface DPA appears complex, overly rigorous and may result in substantial costs to applicants

- Based on Council feedback and discussion by staff from Environment, Public Safety, Planning and Energy Management, the Wildfire Interface DPA map and guidelines have been simplified to integrate the "primary" and "secondary" wildfire interface areas into a single mapped area and corresponding guidelines. Recommendations on the appropriate application of guidelines will be determined by a Qualified Professional. Based on this approach, there is flexibility, for example, with regard to vegetation management in the "defensible space" area (i.e. the Qualified Professional may advise vegetation management is not needed or recommend minimal mitigation depending on site conditions and wildfire risk).
- The costs associated with engaging a Qualified Professional to assess interface fire hazard and recommend mitigation measures is anticipated by staff to be modest in relation to the design and construction of a new home. Non combustible roofing and sheathing is anticipated to be comparable or in some cases, less in cost than traditional products, for example, cedar-shake roofing. These aspects and examples will be clearly communicated in educational materials on the proposed Natural Hazard DPAs.

Re: comments that the Wildfire Interface DPA should be more proactive and apply more comprehensively than only the construction of new homes

- As highlighted at the Council workshop, a proactive awareness and education program will be developed to implement the proposed new Natural Hazard DPAs and encourage voluntary actions in addition to where a DP is required. Brochures, information on the web, articles in District Dialogue and potential workshops with the development and construction industry will be developed.
- Staff will monitor the efficacy of this education program and the implementation of new DPAs including the Wildfire Interface DPA and recommend adjustments to Council as needed.

Re: comments about the importance of an effective communication effort to implement the Wildfire Interface and other Natural Hazard DPAs

- The above points highlight key aspects of the outreach program that will be developed. Further, since 2007 the District has been encouraging homeowners living in wildfire interface areas to protect their homes from wildfire through the distribution of information brochures such as "Summer Safety Tips" and "32 things you can do to protect your home from wildfire." These materials include many of the FireSmart building standards incorporated in the Wildfire Interface DPA Regulation. District Fire Protection Officers also provide a homeowner consultation service to address concerns regarding defensible space and structure protection issues.

BACKGROUND:

The proposed Wildfire Interface DPA, has been under development for approximately two years as part of the OCP process. As articulated in the guidelines, it focuses mitigation measures on new home construction versus renovations, repairs or additions. Efforts to educate homeowners and encourage voluntary measures to minimize potential wildfire hazards in the forest interface area will continue to be pursued through the development and circulation of brochures, web media, District Dialogue articles and other means.

ANALYSIS:

The Wildfire Interface DPA Regulations represent a valuable component of a suite of measures outlined in the District's Community Wildfire Protection Plan (CWPP). The District has, for a number of years, demonstrated its commitment to reduce wildfire potential in the Wildfire Interface areas in the community. As homes in the Wildfire Interface Area re-develop to FireSmart standards, the investment in improved structure protection will demonstrate community commitment to reducing the overall risk to interface fire.

Liability/Risk:

The DPA process is anticipated to provide greater certainty to both staff and property owners and reduce the risk and potential liabilities associated with a natural hazard. The DPA process relies upon the expertise of Qualified Professionals to determine the risks, if any, and prescribe the mitigation necessary to reduce the risk in keeping with Council policy and in accordance with professional standards as appropriate.

Social Policy Implications:

The proposed revisions to the Wildfire Interface DPA support effective and coordinated development where natural hazards may exist thereby facilitating public safety.

Environmental Impact:

The proposed revisions to the Wildfire Interface DPA are anticipated to protect forest ecosystem values and reduce the risk of habitat loss and severe impacts to the landscape in the District due to the effects of wildfire.

Public Input:

A number of community consultations on the Natural Hazard DPA have occurred during the OCP process. Information and feedback opportunities were also provided on the District's website, through District Dialogue, media articles and brochures. Feedback was considered in preparing the proposed DPA's.

Conclusion:

Staff have refined the proposed Wildfire Interface DPA to reflect the recent feedback of Council. Overall, the proposed Wildfire Interface DPA will facilitate the effective management of potential wildfire hazards. The proposed DPA:

- is based upon specific analysis and expertise;
- clearly indicate the areas of potential wildfire interface hazards on a map to be included in the OCP;
- coordinates with the Natural Hazards Management program;

SUBJECT: Wildfire Interface Development Permit Area Regulation

April 11, 2012

Page 4

- provides guidelines for development to reduce risk from the identified wildfire hazard;
- increases the level of certainty for property owners, developers, the community and staff.

The proposed Natural Hazard DPAs are intended to be part of an updated Schedule B containing all Development Permit Areas for the District that is anticipated to be introduced to Council later this spring as an OCP amendment.

Mark Brown

M W Brown.

Community Forester

REVIEWED WITH: <input type="checkbox"/> Sustainable Community Development <input type="checkbox"/> Development Services <input type="checkbox"/> Utilities <input type="checkbox"/> Engineering Operations <input type="checkbox"/> Parks & Environment <input type="checkbox"/> Economic Development	REVIEWED WITH: <input type="checkbox"/> Clerk's Office <input type="checkbox"/> Corporate Services <input type="checkbox"/> Communications <input type="checkbox"/> Finance <input type="checkbox"/> Fire Services <input type="checkbox"/> Human resources <input type="checkbox"/> ITS <input type="checkbox"/> Solicitor <input type="checkbox"/> GIS	REVIEWED WITH: External Agencies: <input type="checkbox"/> Library Board <input type="checkbox"/> NS Health <input type="checkbox"/> RCMP <input type="checkbox"/> Recreation Commission <input type="checkbox"/> Other: _____	REVIEWED WITH: Advisory Committees: <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
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NATURAL HAZARD DEVELOPMENT PERMIT AREAS

I. DESIGNATION OF DEVELOPMENT PERMIT AREAS

Development permit areas are hereby designated as follows:

- A. **Wildfire Interface:** The Wildfire Interface Areas as defined in this document and indicated on the map entitled “Wildfire Interface Development Permit Area” attached hereto are hereby designated pursuant to subsections 919.1(1)(a) and (b) of the Local Government Act (B.C.) as development permit areas (collectively, the “Wildfire Interface DPA”) for the purpose of protecting development from hazardous conditions (wildfire) and protecting the natural environment, its ecosystems and biological diversity from wildfire;
- B. **Creek Hazard:** The potential flood, debris flood and debris flow areas as defined in this document and indicated on the map entitled “Creek Hazard Development Permit Area” attached hereto are hereby designated pursuant to subsection 919.1(1)(b) of the Local Government Act (B.C.) as development permit areas (collectively, the “Creek Hazard DPA”) for the purpose of protecting development from hazardous conditions (flood, debris flow and debris flood); and
- C. **Slope Hazard:** The potential slope hazard areas defined in this document and indicated on the map entitled “Slope Hazard Development Permit Area” attached hereto, and any properties containing a steep slope or a long steep slope as defined in this document, are hereby designated pursuant to subsection 919.1(1)(b) of the Local Government Act (B.C.) as development permit areas (collectively, the “Slope Hazard DPA”) for the purpose of protecting development from hazardous conditions (slope hazard).

Collectively, the Wildfire Interface DPA, Creek Hazard DPA and Slope Hazard DPA are the “Natural Hazard DPAs”.

II. CONTEXT AND JUSTIFICATION

The presence of steep slopes, ravines, creeks, rivers, floodplains and forested lands combined with occasional extreme weather activity make some areas of the District susceptible to conditions that may be hazardous. Such conditions include debris flow, debris flood, flood, slope instability, landslides, erosion, or wildfire. It is the District’s objective to reduce and mitigate the risks associated with development in these areas by applying the District’s ongoing Risk Management Program and taking appropriate precautionary measures through professional studies and assessments in order to guide

safe development, building design, construction and long-term maintenance and monitoring.

III. DEFINITIONS

In this document, the following terms have the meanings assigned to them below:

“APEGBC” means the Association of Professional Engineers and Geoscientists of British Columbia or any replacement or successor professional association;

“buffer” or “buffer area” means an area that remains undeveloped in order to protect slope stability or to provide a setback from a natural hazard;

“debris flood” means a flood of water that carries an unusually large amount of sediment and/or wood debris, and that is often triggered by a landslide dam outbreak; debris floods share some characteristics of both landslides and floods;

“debris flow” means a form of channelized landslide that may occur during unusually wet weather on a steep mountain creek with abundant debris sources; debris flows share some characteristics of both landslides and floods;

“defensible space” means the area around a structure where fuel and vegetation should be managed to reduce the risk of structure fires spreading to the forest or vice versa and to provide safe working space for fire fighters~~fire danger~~;

“designated flood” generally means an event that has a 1 in 200 chance of occurring in any given year, based on a frequency analysis of unregulated historic flood records or by regional analysis in cases of inadequate stream flow data available. In some cases, the designated flood can be the flood-of-record (for example, when an event greater than the 1 in 200 year event has occurred in recent history);

“designated flood level” means the observed or calculated water surface elevation for a designated flood, and is used to determine the flood construction level;

“detailed assessment” means a detailed, site-specific study and field review to delineate hazard areas and provide quantitative estimates of hazard or risk, the minimum requirements of which detailed assessment are set out in the DPA guidelines;

“development” means any of the following:

1. construction of, addition to or alteration of a building or other structure, including, without limitation:
 - i) new building construction;
 - ii) building additions and alterations, including alterations to exterior materials;
 - iii) accessory buildings, including pools, hot tubs, sheds and other structures;or

iv) construction of retaining walls; and

2. alteration of land, including, without limitation:

- i) site clearing or removal of vegetation;
- ii) landscaping, including planting and clearing;
- iii) site grading;
- iv) tree cutting;
- v) placement of fill, or disturbance of soils, rocks or other native materials;
- vi) creation of impervious and semi-impervious surfaces (such as patios and driveways);
- vii) installation or construction or alteration of flood protection or erosion protection works;
- viii) installation or construction or alteration of roads, trails, docks, wharves or bridges; or
- ix) installation, construction or maintenance of drainage, hydro, water, sewer or other utilities or utility corridors, including underground sprinkler or irrigation systems;

“development approval information” means information about the anticipated impact of the proposed activity or development on the community, which information is more particularly described Article IV of this document.

“director” means the District’s General Manager, Planning, Properties and Permits and his or her designate

“District” means The Corporation of the District of North Vancouver, and where the District is required or permitted to provide an approval, acceptance or consent, to form an opinion or a determination, or to require, provide or accept reports, information or other items, “District” shall be deemed to mean the Municipal Council of the District or the District’s General Manager Planning Properties and Permits or his/her designate;

“elements at risk” means anything of social, environmental or economic value, including human lives and well-being that may be affected by a natural hazard;

“exemption” means an exemption from the requirement for a development permit in connection with a given development;

“fire resistive rating” means the time for which a material or construction will withstand the standard fire exposure as determined by a fire test made in conformity with the standard methods of fire testing;

“FireSmart Manual” means the Homeowners FireSmart Manual, BC Edition, 2004, Province of B.C., as the same may be amended or replaced from time to time;

“fire resistive materials” means materials resistant to fire, such as stucco, metal, brick, rock, stone, lumber treated for fire resistance and cementitious products (including hardiplank), but excludes, without limitation, untreated wood, aluminum and vinyl products;

“fire retardant roofing” means Class A and Class B roofing as specified in the FireSmart Manual, or such other roofing as may be specified by the District from time to time;

“flood” means an overflowing or pooling of water on land that is normally dry;

“flood construction level” or “FCL” means the designated flood level plus a specified allowance for freeboard, as determined by a qualified professional;

“flood of record” means the largest recorded flood event on any given stream or river, and when this exceeds the 1 in 200 year instantaneous event it becomes the designated flood;

“flood-proofing” means the alteration of land or buildings to reduce or eliminate the potential for flood damage and may include the use of increased elevation and/or construction methods that allow for occasional wetting and drying;

“floodway” means the channel of a watercourse and those portions of a floodplain that are reasonably required to actively convey the flow of a designated flood;

“freeboard” means a vertical distance typically added to the designated flood level to account for variation in local hydraulic conditions (such as river bend or large boulders in a stream), to allow for waves rising from winds, and to address uncertainties inherent in engineering assumptions and calculations and introduce a factor of safety to such calculations;

“fuel” means a combustible material;

“habitable space” means any room or space within a building or structure, which room or space is or can be used for human occupancy, commercial sales, or storage of goods or mechanical or electrical equipment (including furnaces), and which room or space would be subject to damage if flooded;

“landslide” means a movement of rock, debris or earth down a slope, and can be the result of a natural sequence of events and/or human activities; landslides include rock falls, rock slumps, rockslides, rock avalanches, rock creep, debris falls, debris slides, debris flow, debris floods, earth falls, earth slumps, earth slides, earth flows, earth creep and flow slides;

“long steep slope” means any land with a slope angle greater than 20 degrees (36%) measured over a vertical distance of at least 20 metres;

“master requirements list” or “MRL” means the information guides published by the District of North Vancouver and containing requirements for development permits and/or building permits on properties with a range of natural hazards or special

circumstances;

“**natural boundary**” means the natural boundary as defined in the Land Act (B.C.) In addition, the natural boundary includes the best estimate of the edge of dormant or old side channels and marsh areas;

“permanent structure” means any lawfully constructed or legally non-conforming building or structure that is a fixture on land and is placed or erected on a permanent foundation;

“**potential debris flow and debris flood hazard areas**” means those areas identified as such on the Creek Hazard Development Permit Area Map and includes all properties that are located wholly or partially within any such identified area;

“**potential flood hazard areas**” means those areas identified as such on the Creek Hazard Development Permit Area Map and includes all properties that are located wholly or partially within any such identified area and all properties that intersect or touch any red line (the 10 metre reference line) shown adjacent to a potential flood hazard area on the Creek Hazard Development Permit Area Map;

“**potential slope hazard areas**” means those areas identified as such on the Slope Hazard Development Permit Area Map and includes all properties that are located wholly or partially within any such identified area and all properties that intersect or touch any red line (the 20 metre reference line) adjacent to a potential slope hazard area shown on the Slope Hazard Development Permit Area Map;

“**preliminary assessment**” means a preliminary or overview assessment by a qualified professional to determine the extent, location or presence of a hazard, the probability of a hazardous event affecting an element at risk, and whether a detailed assessment is required;

~~“primary wildfire interface area” means the wildfire risk area, all parcels coloured red on the Wildfire Interface Development Permit Area Map, and all parcels that touch or intersect the red line shown on the Wildfire Interface Development Permit Area Map (which red line is located 25 metres from the boundary of the wildfire risk area shown on the map);~~

“**qualified professional**” means a professional with appropriate education, training and experience, fully insured and in good standing with the relevant professional association. For the purpose of the flood and slope hazard assessments (Creek Hazard DPA and Slope Hazard DPA), “qualified professional” means a specialist Professional Engineer or Professional Geoscientist, as appropriate, with experience or training in geotechnical and geohazard assessments, river hydraulics and hydrology and, where appropriate, debris flow processes experience or training and/or structural engineering expertise in connection with mitigation works. For the purpose of the wildfire interface hazard assessments (Wildfire Interface DPA), “qualified professional” means a Registered Forest Professional, ~~–qualified by training or experience in fire protection engineering~~, with at least two years experience in with the assessment, fuel management prescription development and mitigation of wildfire hazards in British

Columbia;

“renovation, repair or addition” means renovations, repairs or additions to a permanent structure the value of which do not exceed 75% or more of the value of the permanent structure as determined by the director;

“risk” is a measure of the probability and consequence of an adverse affect in relation to health, property, environment or other things;

~~“secondary wildfire interface area” means all parcels coloured blue on the Wildfire Interface Development Permit Area Map and all parcels that touch or intersect the blue line shown on the Wildfire Interface Development Permit Area Map (which blue line is located 100 metres from the boundary of the wildfire risk area shown on the map), but does not include those parcels that are included in the primary wildfire interface area;~~

“steep slope” means any land with a slope angle greater than 20 degrees (36%) measured over a vertical distance of at least 10 metres;

“top of bank” means:

1. for a floodplain area contained in a ravine, the point closest to the boundary of the active floodplain of a stream where a break in the slope of the land occurs such that the grade beyond the break is flatter than 3:1 at any point for a minimum distance of 15 metres measured horizontally from the break; and
2. for a floodplain area not contained in a ravine, the edge of the active floodplain of a stream where the slope of the land beyond the edge is flatter than 3:1 at any point for a minimum distance of 15 metres measured horizontally from the edge;

“top of ravine bank” means the first significant break in a ravine slope where the break occurs such that the grade beyond the break is flatter than 3:1 for a minimum distance of 15 meters measured horizontally from the break, and the break does not include a bench within the ravine that could be developed;

“watercourse” means any natural or man-made depression with well-defined banks and a bed 0.6 metres or more below the surrounding land that serves to give direction to a current of water at least six months of the year, or having a drainage area of two square kilometres or more upstream of the point of consideration;

“ wildfire interface area” means, all parcels coloured orange on the Wildfire Interface Development Permit Area Map;

“wildfire risk mitigation” means any action taken to eliminate or reduce the long-term risk of wildfire; and

“wildfire risk area” means the forested area coloured orange on the Wildfire Interface Development Permit Area Map.

IV. DEVELOPMENT APPROVAL INFORMATION

In accordance with section 920.1 of the Local Government Act, the District may require development approval information in order to assess the suitability of an application for a development permit, and all lands designated as Natural Hazard DPAs are hereby also designated as development approval information areas.

The types of plans, studies and other information that may be required in support of development applications include:

1. environmental assessment and mitigation plan by a qualified environmental professional;
2. geotechnical stability assessment by a qualified Professional Engineer or Geoscientist;
3. hydrological assessment of drainage patterns and potential flood and hydraulic hazard by a qualified Professional Engineer or Geoscientist;
4. assessment of fire interface hazards and mitigation measures by a Registered Forest Professional-Forester, qualified by training or experience ~~in fire protection engineering~~, with at least two years experience within the assessment, fuel management prescription development and mitigation of wildfire hazards in British Columbia;
5. structural design and assessment by a qualified Professional Engineer for structural works;
6. site information based on a survey plan prepared by a certified B.C. Land Surveyor;
7. current state of title certificate and copies of all restrictive covenants registered on title, including relevant schedules and attachments;
8. reports or other information from additional qualified professionals such as designers (as defined in the District of North Vancouver Building Bylaw) or B.C. Registered Professional Landscape Architects, as appropriate to the development permit application such as but limited to;
 - » location map;
 - » map or plan of the property including topography, natural features, existing structures, infrastructure, surface drainage, parcel boundaries, adjacent streets and rights of way;
 - » detailed site plan and/or air photo overlay indicating the proposed location of all proposed structures, sewage disposal systems, stormwater detention, drainage works, driveways, parking areas or impervious surfaces, servicing infrastructure,

and indicating the extent of the proposed site clearing;

- » proposed methods and level of effort;
- » observations of topography, surficial and bedrock geology (including the presence of fill and yard waste), natural processes and elements at risk (including elements located up slope and/or down slope from the proposed development);
- » any relevant climatic, hydrometric, geological, terrain/slope data, hydrogeological, ecological or other site information;
- » a demonstrated review of all relevant background reports;
- » a review of the historic nature, extent, magnitude, frequency and potential effect of hazards or constraints that may affect the property;
- » a description of the methodology, criteria and assumptions used to undertake the assessment;
- » results of the assessment;
- » recommendations to reduce the hazards and/or vulnerability to the proposed development and elements at risk (including elements located up slope and/or down slope of the proposed development) as required to comply with the District's current risk tolerance criteria;
- » a detailed description of any proposed mitigation works and/or actions designed to mitigate the hazard or impact of development, including erosion control during construction;
- » a written synopsis demonstrating that the proposed development is consistent with the applicable Development Permit Guidelines as provided by the District, and identifying any mitigation or compensation measures that may be specified as development permit or rezoning conditions;
- » conclusions of a qualified professional, accompanied by supporting rationale;
- » a peer review of a qualified professional's report;
- » any other information that the District deems relevant or necessary; and

The applicant may be required to submit written "Terms of Reference" indicating the scope of work and professional expertise to be used for the preparation of development approval information. The Terms of Reference must be approved by the District prior to the information being prepared. For most natural hazard development permit applications, a two-tiered approach will be used, consisting of a preliminary assessment followed by a detailed assessment where deemed necessary by the District.

All reports and information shall be prepared and provided at the applicant's cost. All reports, opinions and plans shall be signed and sealed by the appropriate qualified professional.

Where hazards are identified on the site, the District may require the submission of plans and reports in electronic format for inclusion in the District's hazard database. Specific content for detailed reports and assessments for each Natural Hazard DPA are included in Section VII Guidelines. Where the District deems any report or information submitted to be inadequate, such report or information will not be accepted and a permit will not be issued.

V. OBJECTIVES

A. Wildfire Interface Development Permit Area: The objectives within the Wildfire Interface DPA that justify its designation as a development permit area and a development approval information area are as follows:

1. ensure that development within the wildfire interface fire hazard area is managed in a way that:
 - i) minimizes the risk to property and people from wildfire interface fire hazards;
 - ii) promotes activities to reduce fire interface hazards while still addressing environmental issues; and
 - iii) minimize the risk of fire to the District's forests;
2. proactively manage conditions affecting potential fire behaviour, thereby increasing the probability of successful fire suppression and containment, and thereby minimizing adverse impacts;
3. conserve/preserve the visual and ecological assets of the forest for the benefit of present and future generations; and
4. reduce the risk of post-fire landslides, debris flows and erosion;

B. Creek Hazard DPA (Flood, Debris Flood and Debris Flow Development Permit Area): The objectives within the Creek Hazard DPA that justify its designation as a development permit area and a development approval information area are as follows:

1. minimize the risk to people and property from creek hazards;
2. ensure development is constructed in a location and manner to maximize safety;
3. minimize development in high hazard areas due to debris flow, debris flood

areas;

4. allow flooding to occur within natural floodplains;
5. implement structural and non-structural flood protection measures to mitigate the impacts of flooding within areas already developed;
6. avoid increasing the hazard to or vulnerability of others on the floodplain; and
7. preserve a natural riverine and floodplain regime.

C. Slope Hazard Development Permit Area: The objectives within the Slope Hazard DPA that justify its designation as a development permit area and a development approval information area are as follows:

1. minimize the risk to people and property from slope hazard;
2. develop safely and minimize the impacts on or near steeply sloped lands, including the potential run out area below steep slopes;
3. reduce slope hazards and landslide risk to people and property by carefully managing development and construction practices on or near steeply sloped lands;
4. avoid alteration of steeply sloped lands that may cause increased instability of the land or adjacent areas;
5. ensure professional design of structures and mitigative works and to ensure field review during construction and post-construction certification; and
6. ensure ongoing maintenance and monitoring of steeply sloped lands.

VI. REQUIREMENT FOR DEVELOPMENT PERMIT

All development within the Hazard DPAs shall require a development permit unless exempted in accordance with Section VII below.

Development permits issued may include any development conditions permitted by the Local Government Act, as appropriate to the specific development in question.

VII. EXEMPTIONS FROM REQUIREMENT FOR DEVELOPMENT PERMIT

Under certain conditions, as outlined below, development may be exempted from a development permit. Staff will confirm the exemption in writing, specific to the proposed activity or development.

If a parcel of land is located within more than one development permit area, no exemption from the development permit requirement in connection with one development permit area shall act as an exemption in connection with another development permit area.

Subject to the foregoing paragraph, a development permit shall not be required if the following conditions are fulfilled:

A. In the Wildfire Interface Development Permit Area, no development permit shall be required in connection with:

1. public works and services and maintenance activities carried out by, or on behalf of, the District of North Vancouver, and approved by the District;
2. ~~any work that is not associated with or required in connection with a building permit application;~~
3. interior or exterior renovations, repairs or additions to a permanent structure~~lawfully constructed or legally non-conforming structure.~~

B. In the Creek Hazard DPA (Flood, Debris Flood and Debris Flow Development Permit Area) - no development permit shall be required in connection with:

1. public works and services and maintenance activities carried out by, or on behalf of, the District of North Vancouver, and approved by the District;
2. development where the Creek Hazard DPA maps identify a potential flood hazard but the lowest elevation in the creek channel adjacent to the property is more than 2 metres below the top of proposed concrete slab or underside of wooden floor system for any area to be used for habitation, business or storage of goods damageable by floodwaters. This exemption does not apply where the flood hazard arises from Capilano River, Mackay Creek (below Highway #1), Mosquito Creek, Lynn Creek, or Seymour River; or to debris flow or debris flood hazards;
3. repairs or renovations (including roof repairs or replacement) to a lawfully constructed or legally non-conforming building or structure within the existing building foundations;
4. construction of additional storeys above an existing building;
5. additions of less than 25 m² in area, provided that no other additions have been commenced or constructed within the immediately preceding 24-month period;
6. replacement or repair of an existing deck. In areas of potential debris flow or debris flood, this exemption applies provided that the location and dimensions of the deck do not change;
7. construction of an accessory building permitted by the zoning bylaw, provided that there is no habitable space in such accessory building;

8. minor alterations or repairs to existing roads, paths or driveways, provided that there is no further disturbance of land or vegetation;
 9. habitat creation, streamside restoration or similar habitat enhancement works in accordance with District bylaws and a plan approved by the District;
 10. planting of trees or vegetation in accordance with District bylaws; or
 11. removal of trees or vegetation in accordance with District bylaws.
- C. In the Slope Hazard Development Permit Area - no development permit shall be required in connection with:
1. public works and services and maintenance activities carried out by, or on behalf of, the District of North Vancouver, and approved by the District;
 2. non-structural repairs or renovations (including roof repairs or replacement) to a lawfully constructed or legally non-conforming building or structure within the existing building foundations, or where there is no further encroachment into the Development Permit Area, provided that such repairs or renovations do not increase the floor area of the building or structure;
 3. replacement or repair of an existing deck, provided that the location and dimensions do not change;
 4. construction of an accessory building of less than 270 sq. ft. permitted by the Zoning Bylaw that contains no habitable space, if it is sited in a previously landscaped/disturbed area that is not load-bearing (for example with fill or a structure or feature), if no removal of trees or placement of fill will be required, if it is sited at least 10 metres away from the crest of any steep slope, and if no excavation within 10 metres of the base of any steep slope will be required;
 5. habitat creation, streamside restoration or similar habitat enhancement works in accordance with District bylaws and a plan approved by the District; or
 6. planting of vegetation, except for the planting of trees within 10 metres of the top of a steep slope.

VIII. RISK TOLERANCE

The District of North Vancouver has established a risk-based approach to the management of natural hazards, including Risk Tolerance Criteria that apply to any development within the designated debris flow and debris flood hazard areas (parts of the Creek Hazard DPA) and Slope Hazard DPA. The risk tolerance criteria are intended for use by Qualified Professionals and set out the maximum levels of tolerable risks to life for both existing and new development within the District. Alternate criteria for assessing landslide safety utilize minimum factors of safety (FOS). The District's risk tolerance criteria may be amended from time to time.

Levels of Assessment

The appropriate method of assessment and level of effort should be determined by a qualified professional based on the type of hazard, the type of proposed development, and local site conditions. In some cases it may be appropriate to carry out screening studies based on assessment of the level of hazard or partial risk to determine if the proposed development may lead to the potential for loss of life caused by natural hazards. Where a potential for loss of life exists, the District may require that a decision to proceed with development be supported by a detailed quantitative risk assessment or factor of safety (FOS) calculations.

IX. GUIDELINES

The following guidelines should be followed when assessing a development permit application and determining what conditions, if any, should be imposed in a development permit. Alternative methods or materials may be considered where they provide equivalent or better performance and ~~fulfill~~fulfill the objectives of these guidelines. Staff should require that sufficient evidence or proof be submitted to substantiate any claims that may be used regarding use of the alternative method or material.

The District may impose in a development permit any condition permitted by law in order to ensure compliance with these guidelines.

A. All Hazard DPAs – The following guidelines apply in Wildfire Interface DPA, Creek Hazard DPA (Flood/Debris Flood/Debris Flow) and Slope Hazard DPA:

1. The appropriate method of assessment of hazard and risk should be determined by the qualified professional based on the type of hazard, the type of proposed development and local site conditions.
2. Where a potential for loss of life exists, the District may require that a decision to proceed with development be supported by a detailed quantitative risk assessment and/or factor of safety (“FOS”) calculations. By a Qualified Professional.
3. Where a parcel is designated as more than one type of development permit area, a single development permit may be issued, provided that the guidelines for all relevant development permit areas are addressed in the development permit.

B. In the Wildfire Interface DPA – the following guidelines apply:

1. The development should be located as far away from the adjacent wildfire risk areas as is reasonably possible or feasible.
2. The following fire resistive materials and construction practices should be required for the properties that are in the wildfire risk area or the ~~primary~~-wildfire

interface area:

- i) fire retardant roofing materials should be used, and asphalt or metal roofing should be given preference;
- ii) decks, porches and balconies should be sheathed with fire resistive materials;
- iii) all eaves, attics, roof vents and openings under floors should be screened to prevent the accumulation of combustible material, using 3mm, non combustible wire mesh, and vent assemblies should use fire shutters or baffles;
- iv) exterior walls should be sheathed with fire resistive materials;
- v) fire-resistive decking materials, such as solid composite decking materials or fire-resistive treated wood, should be used; and
- vi) all windows should be tempered or double-glazed to reduce heat and protect against wind and debris that can break windows and allow fire to enter the home;
- vii) all chimneys and wood-burning appliances should have approved spark arrestors; and
- viii) building design and construction should generally be consistent with the highest current wildfire protection standards published by the National Fire Protection Association or any similar, successor or replacement body that may exist from time to time.

3. The following landscape and service designs should be required if properties are within the ~~primary~~ wildfire interface area:

- i) new building construction should include the use of firebreaks, which may be in the form of cleared parkland, roads, or utility right of ways;
- ii) all new hydro servicing should be underground, or where this is not feasible, poles of non-combustible materials should be used (concrete);
- iii) wildfire risk mitigation and landscaping techniques should ensure that natural features of the site and adjacent ecosystems are protected, conserved~~preserved~~ and enhanced in accordance with District bylaws;
- iv) if removal of trees or vegetation is deemed necessary to reduce risk, District approval is required and replacement trees or vegetation may be required by the District;
- v) where warranted due to potential fire risk, a defensible space of at least 10 metres should be managed around structures with the goal of eliminating fuel and combustible debris, reducing risks from approaching wildfire and reducing the potential for building fires to spread to the forest, and the

required defensible space may be larger in areas of sloping ground where fire behaviour creates greater risk;

4. Applicants for development permits for all new building construction within the ~~primary~~ wildfire interface area should be required to submit a detailed report prepared by a qualified professional assessing existing conditions and impacts of the proposed development on wildfire hazard. ~~Such reports may be required for new building construction within the secondary wildfire interface area.~~ The report should include:
 - i) plans at 1:100 minimum scale and 1m contour interval indicating;
 - ii) parcel boundaries and adjacent streets and rights of way;
 - iii) any existing development including locations and dimensions of existing buildings, driveways, parking areas, utilities, retaining walls;
 - iv) extent and nature of existing landscaping including details of trees and ground cover;
 - v) the exterior materials of existing and proposed buildings (siding and roofs);
 - vi) locations and dimensions of proposed buildings, driveways, parking areas and utility services relative to the wildfire risk area;
 - vii) a description of all trees and vegetation within the wildfire risk area highlighting those recommended for removal or mitigation in order to create a defensible space around existing and proposed development;
 - viii) a plan for the expedient removal of all wood, vegetation and construction debris resulting from development;
 - ix) a hazard assessment of the site and adjacent forest fuel conditions;
 - x) identification of the fire-resistive construction materials and practices, in accordance with the Wildfire Interface DPA guidelines;
 - xi) identification of the defensible space, in accordance with Wildfire Interface DPA guidelines, including details of proposed landscaping; and
 - xii) any temporary encroachment caused by clearing, grading and other construction-related activities, and measures to mitigate and/or compensate for such encroachment.
5. ~~For those properties within the secondary wildfire interface area, items 2 (i) through (v) and (viii) above should be required.~~ It is recommended that building design and construction should generally be consistent with the highest current wildfire protection standards published by the National Fire Protection Association or any similar, successor or replacement body that may exist from time to time.

Assessment Reports

6. The District may require the submission of a preliminary assessment report as a screening tool in connection with any development.
7. All wood, vegetation and construction debris identified in the qualified professional's report should be removed within three months of permit issuance, or immediately during high fire risk seasons, and the District may require security in connection with such removal.
8. The District may require that a tree assessment and retention/restoration plan be completed by a qualified professional ~~arborist~~ in accordance with current standards and District report requirements.

C. In the Creek Hazard DPA (Flood, Debris Flood and Debris Flow) – the following guidelines apply:

1. Development should:
 - i) be constructed in a location and manner that will maximize the safety of residents and property;
 - ii) be located in the least hazardous part of the site;
 - iii) be minimized in floodplain areas, or where development may impede a natural floodway
 - iv) comply with flood construction requirements identified by a qualified professional, and all new habitable space should be above the flood construction level specified by the qualified professional except where otherwise exempted;
 - v) not increase the risk or hazard to, or vulnerability of, other properties or structures;
 - vi) not include space below the flood construction level that could subsequently be converted to living space except in accordance with recommendations made by a qualified professional and in compliance with these guidelines except where otherwise exempted;
 - vii) in connection with renovations to any existing development, where reasonable, reduce flood hazard to existing buildings and structures by raising the habitable floor space to flood construction levels; and
 - viii) all mechanical equipment and electrical wiring should be above the flood construction level.
2. Background information on potential flood, debris flood and debris flow hazards may be available through the District's Natural Hazard Management Program, and, if so, information in these reports should be referenced as part of any

development permit application;

3. Development should be located outside potential hazard areas or mitigation should be undertaken to reduce risk to an acceptable level (risk for both the subject property and any adjacent or nearby lands should be addressed) as determined by a qualified professional.
4. Structural and/or non-structural flood protection measures should be implemented to mitigate the impacts of flooding within areas already developed.
5. Vegetation should be maintained and/or restored along all creek banks, valley floors and floodplains and within the required setback from top of bank to minimize erosion in accordance with the Streamside Development Permit Guidelines.
6. Restrictions on the permitted uses, density or scale of building may be imposed if necessary to reduce potential hazard to acceptable levels.
7. Storm sewer connections should be maintained in accordance with the Sewer Bylaw to reduce possible erosion of creek banks.
8. Proposed flood construction levels for proposed building sites should be clearly defined by a qualified professional, preferably in Geodetic Survey of Canada datum.
9. Natural riverine and floodplain regimes should be preserved. Development should be sited so as to allow normal creek processes (erosion and channel migration) and anticipated flooding to occur. Where appropriate, this may include actions such as deflecting flood water through site grading, or allowing for floodways or pooling of floodwater through grading of the site.

Assessment Reports

1. Prior to any development of land, the potential for debris flow, debris flood or flooding (as relevant to the site), as well as the impact of the proposed development on or by such natural hazard conditions, shall be analyzed by a qualified professional.
2. For debris flow and debris flood areas, a risk assessment report must be completed in accordance with the District's current risk tolerance criteria. The qualified professional must state whether the level of safety is acceptable or unacceptable relative to such risk tolerance criteria.
3. Also for debris flow and debris flood areas, reports must meet all report guidelines published by the APEGBC or any replacement or successor body from time to time, and must specify that the land may be safely used for the use intended
4. The design flow for floods should be the 200-year return period peak instantaneous flow or the flood of record, except as otherwise recommended by

a qualified professional, provincial standards or guidelines. New culverts and other watercourse crossings should be capable of passing this flow with no surcharging. New bridges should be capable of passing this flow with an acceptable freeboard allowance.

5. In connection with debris flood and debris flow hazards, a preliminary assessment may be completed by a qualified professional as an initial step to determine whether risks are broadly acceptable pursuant to the District's current risk tolerance criteria. For creeks prone to debris flows or debris floods, if the preliminary assessment suggests that risks are broadly acceptable, then further risk assessment may not be required. For flood hazards, a preliminary assessment may also suffice, if the proposed construction is at a greater elevation than the flood construction level identified by a qualified professional and no erosion risk is identified.
6. Any detailed assessment report by a qualified professional shall, at a minimum:
 - i) provide all relevant site information;
 - ii) identify and assess the potential for landslide, debris flow, debris flood, flood, erosion or other hazard on the subject property and applicable surrounding lands and identify how the development or other activities on the land will be designed and constructed to promote safety of the development and of adjacent/downstream properties;
 - iii) determine whether any proposed alterations to the site, including excavation, road and driveway construction, foundation and building construction, installation of utility services, retaining walls or other works will be at risk from debris flows or debris floods, or flood hazards;
 - iv) clearly identify suitable building envelopes, setbacks and flood construction levels and identify any areas to remain undeveloped based on the risk assessment;
 - v) provide a clear description of the assumptions and methodology used to undertake the assessment, and the potential magnitude and intensity of any potential hazard events;
 - vi) review all applicable historical hazard event information and relevant previous reports affecting the site and surrounding area;
 - vii) assess the nature, extent, magnitude, frequency and potential effect of all applicable creek hazards that may affect the property, including the effects on perimeter drainage, stormwater management;
 - viii) use current climate data and modeling in connection with the assessment;
 - ix) where the proposed development is located in debris flow/debris flood hazard areas, demonstrate that the proposed development complies with the District's current risk tolerance requirements;

- x) identify the location and amount of any proposed removal or placement of soil or other fill, and confirm that the change will not adversely affect other properties;
- xi) identify proposed mitigation measures to reduce debris flow, debris flood or flood risks (up to the flood construction level), as the case may be, including but not limited to works to stabilize the watercourse edge or elevate the building site;
- xii) state that proposed mitigative works will not transfer risk to other properties;
- xiii) establish criteria for the design, construction, and long-term maintenance of any development or mitigative works proposed on the site;
- xiv) provide a professional opinion describing detailed measures to safeguard neighbouring properties and structures from any reasonably apparent hazard related to construction or site preparation on the subject property;
- xv) clearly outline the short-term and long-term maintenance requirements, including regular maintenance and any special maintenance requirements after an extreme event;
- xvi) identify any hazard on the subject site that may be related to municipal infrastructure (for example, culverts or storm drainage works);
- xvii) provide detailed recommendations to address bank erosion protection and flood-proofing up to flood construction levels, in accordance with all provincial and other guidelines that may be in place from time to time; and
- xviii) provide a professional opinion, subject to conditions and qualifications contained in the report, that the land may be safely used for the use intended and meets provincial guidelines (where applicable).

D. In the Slope Hazard DPA – The following guidelines apply:

1. The appropriate method of assessment of hazard and risk should be determined by the qualified professional based on the type of hazard, the type of proposed development and local site conditions.
2. Where a potential for loss of life exists, the District may require that a decision to proceed with development be supported by a detailed quantitative risk assessment and/or factor-of-safety (“FOS”) calculations.
3. Background information on potential slope hazards in some areas is available through the District’s Natural Hazard Management Program, and the information in these reports should be referenced as part of any development permit application. Such information is available for Berkley, Lynn Valley/Westlynn, Pemberton Heights, Capilano River East, Mosquito Creek, Mount Fromme East, Riverside West and Deep Cove/Cove Cliff, among others.

4. Development should minimize any alterations to steep slopes, and the development should be designed to reflect the site rather than altering the site to reflect the development.
5. Landscaping should minimize the terracing of land and should follow the natural contours of the land.
6. Structures or landscaping should be located as far as reasonably practicable from steep slopes or channel discharge/runoff points at the base of slopes.
7. Stepped and articulated building forms that integrate and reflect the natural site contours and slope conditions should be used, and large unbroken building masses that are unsuitable for sloped conditions should be avoided.
8. The construction of structures, pathways/trails, driveways, utilities, drainage facilities, septic fields, swimming pools, hot tubs, ponds, landscaping or other uses at or near the top or base of steep slopes should be avoided. A minimum ten metre buffer area from the top or base of any steep slope should be maintained free of development except as otherwise recommended by a qualified professional. On very steep slopes, this buffer area may be increased.
9. Vegetation should be maintained and/or reinstated on the slopes and within any buffer zone above the slopes in order to filter and absorb water and minimize erosion.
10. No fill, including yard clippings, excavated material, sand or soil, should be placed within ten metres of the top of slopes or along pre-existing drainage channels.
11. The base of slopes should not be undercut for building, landscaping or other purposes except in accordance with the recommendations of a qualified professional and a permit issued under this section.
12. For homes at the base of slopes, it is preferable for bedrooms to be constructed on the downslope side of the home.
13. Designs should avoid the need for retaining walls, particularly to minimize cutting of the uphill slope. Large single plane retaining walls should be avoided. Where retaining walls are necessary, smaller sections of retaining wall should be used. Any retaining structures in steeply sloped areas must be designed by a qualified professional.
14. Restrictions on the permitted uses, density or scale of building may be required if necessary to reduce potential risks to the development or to the sloped lands.
15. Disturbed slopes should be reinforced and revegetated, especially where gullied or where bare soil is exposed. Planting should be done in accordance with the recommendations of a Landscape Architect or Registered Professional Forester, and a permit issued by the District.
16. Native species, including trees, shrubs and other plants, should be used for any

new planting.

17. Any structural mitigation measures must be designed by a qualified professional.
18. Water should be diverted away from slopes, yards and structures in a controlled manner and ponding should be avoided near slopes.
19. Flow should be contained by capturing roof and pavement drainage.
20. Property, roof drainage and landscaping should be designed and maintained to shed water away from slopes (especially steep slopes).
21. Buildings should be connected to the storm drainage system or alternative methods approved by the District.
22. Concentrated water (such as roof drainage) should be discharged toward storm drains or street gutters and not over sloped lands.
23. The extent of paved or hard-surfaced areas should be limited, and absorbent or permeable surfaces should be used instead to reduce the rate of infiltration or runoff.
24. Lots should be graded so water is directed toward the street and away from slopes.

Assessment Reports

1. Prior to any development or alteration of the land, slope stability and the potential for landslip, rockfall, slope failure or other hazard, and the impact of the proposed development on or by such natural hazard conditions shall be analyzed by a qualified professional.
2. A preliminary assessment including a partial risk assessment or qualitative hazard assessment should be completed by a qualified professional as an initial step in estimating whether a slope hazard may be present. If the preliminary analyses demonstrate that risks are broadly acceptable in accordance with the District's risk tolerance criteria, as amended from time to time, further risk assessment may not be required. Where a qualitative hazard assessment and/or preliminary assessment report demonstrates that risk is not broadly acceptable, a detailed assessment shall be required.
3. If a further detailed assessment is required, such report shall:
 - i) include a risk assessment in accordance with current District risk tolerance criteria. The qualified professional must state whether the level of safety is acceptable or unacceptable relative to the District's current risk tolerance criteria;
 - ii) meet any report guidelines published by APEGBC or any successor or

replacement body from time to time, and must specify that the land may be safely used for the use intended;

- iii) include all relevant site information;
- iv) include an inventory of site features such as watercourses, soil types, depths and conditions;
- v) identify and assess potential for landslide, erosion, unstable slopes or other hazard on the subject property and surrounding lands;
- vi) determine whether the proposed alterations to the site, including, without limitation, cut and fill related to excavation, road and driveway construction, foundation and building construction, installation of utility services, retaining walls or other works, will affect slope stability;
- vii) identify how development or other activities on the land should be designed and constructed to promote the safety of the development and prevent destabilization or erosion on the slope;
- viii) establish suitable building envelopes and setbacks and identify any areas that should remain undeveloped;
- ix) identify required or recommended mitigation measures and establish criteria for the design, construction, and long-term maintenance of any development or mitigative works proposed on the site;
- x) provide detailed measures to safeguard neighbouring properties and structures from any hazard related to construction or site preparation on the subject property; and
- xi) identify the location and amount of any proposed removal or placement of soil or other fill;
- xii) include the professional opinion of the qualified professional, subject to conditions and qualifications contained in the report, that the land may be safely used for the use intended; and
- xiii) address other considerations identified by and provided to the qualified professional by the District.

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